March 14, 2022

MEMORANDUM TO: TONY MENKE, P.E., CHIEF
DIVISION OF PROJECT DELIVERY

We are handing you Final Plans for the project noted below for the April 2022 letting.

Jeff Sims/ Shawn Schwensen
Design Squad

70-31 KA-6083-01 ACNHP-A608(301)	Geary	0.067 mile
Project Number	County	Length

REMARKS:

Grading & Surfacing (concrete), Bridge Redeck, Seeding

Bridge #026 (RS 1092/McDowell Creek Rd.) over I-70 in Geary County located 7.69 miles northeast of K-57

APPROVED:

For: CHIEF, BUREAU OF ROAD DESIGN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	1	85

PROJ. NO. 70-31 KA-6083-01
FED. AID PROJ. NO. ACNHP-A608(301)

GRADING AND SURFACING (CONCRETE)
BRIDGE REDECK
SEEDING

INDEX OF SHEETS

STATE OF KANSAS

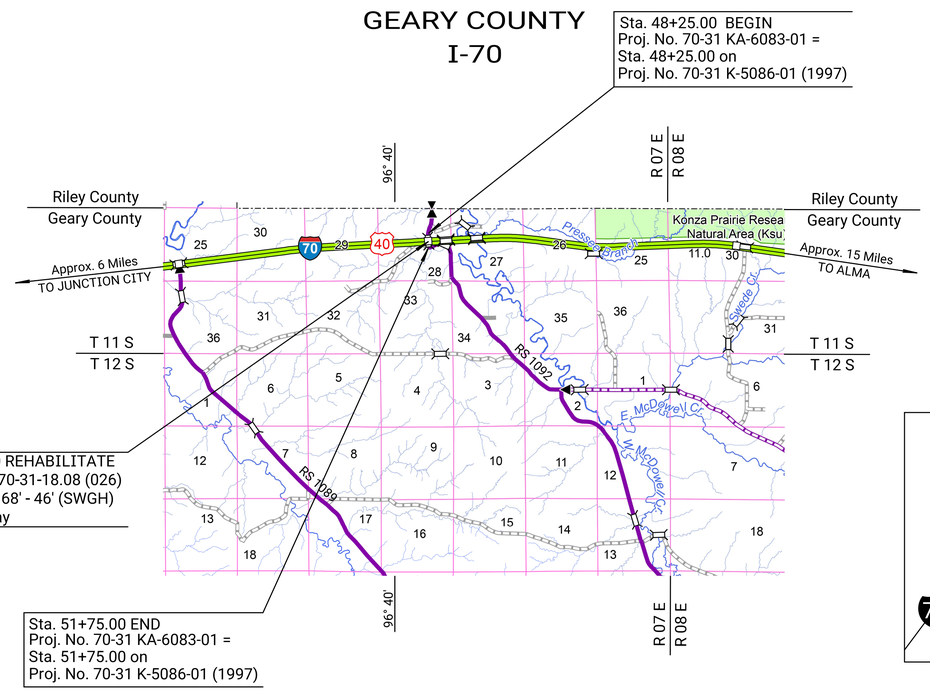
DEPARTMENT OF TRANSPORTATION

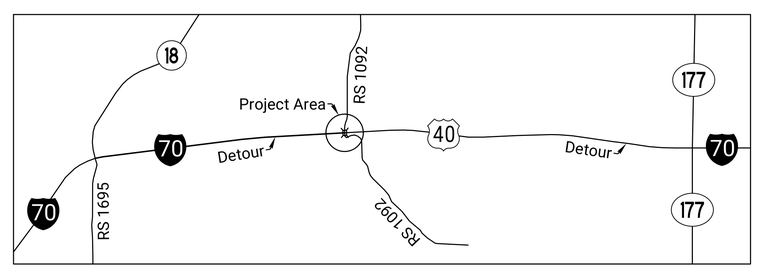
PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY

FEDERAL AID PROJECT

GEARY COUNTY
I-70

SCALE: 1" = ½ Mile





DETOUR SKETCH
(not to scale)

Traffic to be carried around construction on a state route detour as shown on the detour sketch. The detour shall be on, I-70 & K-18.

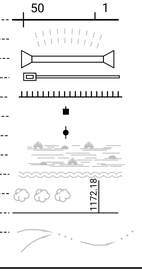
DESIGN DESIGNATION

McDowell Creek Road

AADT	(2022)	= 400
AADT	(2042)	= 590
DHV		= 10%
D		= 60%
T		= 8%
V		= 55 mph
C of A		= None
Clear Zone		= 14'

CONVENTIONAL SIGNS

COUNTY LINE	CENTER LINE OF PROJECT
CITY LIMITS	TERRACE
STATE OR NATIONAL LINE	CULVERTS
TOWNSHIP, SECTION or GRANT LINE	DROP INLET & STORM SEWER
PROPERTY LINE	ACCESS CONTROL
HIGHWAY FENCE	POWER POLE
EXISTING FENCE	TELEPHONE POLE
GUARDRAIL	MARSH
CONSTRUCTION LIMITS	HEDGE
RIGHT OF WAY LINE	TREES
TRAVELED WAY	PROFILE ELEVATION
RAILROADS	STREAM or CREEK



GROSS LENGTH OF PROJECT	350.00	FT. (Includes Equations)	
EXCEPTIONS	NONE		
NET LENGTH OF PROJECT	350.00	FT.	0.067 MILES
NET LENGTH OF BRIDGES	230.00	FT.	0.044 MILES
NET LENGTH OF ROAD	120.00	FT.	0.023 MILES

Approved Mar 14, 2022
Date

State Transportation Engineer

By:

Chief, Bureau of Road Design

KANSAS DEPARTMENT OF TRANSPORTATION

	BY	DATE
SURVEY	K. LaRiviere	2021
CADD TECHNICIAN	M. R. Remboldt	2022
DESIGNERS	S. Swann (Road)/P. Madrigal (Bridge)	2022
SQUAD	J. Sims (Road)/S. Schwensen (Bridge)	2022

Plotted by : Stacy.Swann 08-FEB-2022 14:33
File : KA608301rti-01.dgn

KDOT Graphics Certified 01-19-2022 Sh. No. 1

KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	2	89

JEFFREY S. SIMS LICENSED 23132 KANSAS PROFESSIONAL ENGINEER 01/26/2022 Name: Jeff Sims, P.E. Co. Name: Kansas Department of Transportation Plan Section: Road	SHAWN MICHAEL SCHWENSEN LICENSED 15857 KANSAS PROFESSIONAL ENGINEER Jan 26, 2022 Name: Shawn Schwensen Co. Name: Kansas Department of Transportation Plan Section: Bridge	KARLA SUE WATERS LICENSED 13347 KANSAS PROFESSIONAL ENGINEER Feb 18, 2022 Name: Karla Sue Waters, P.E. Co. Name: Kansas Department of Transportation Plan Section: Traffic					

KANSAS DEPARTMENT OF TRANSPORTATION

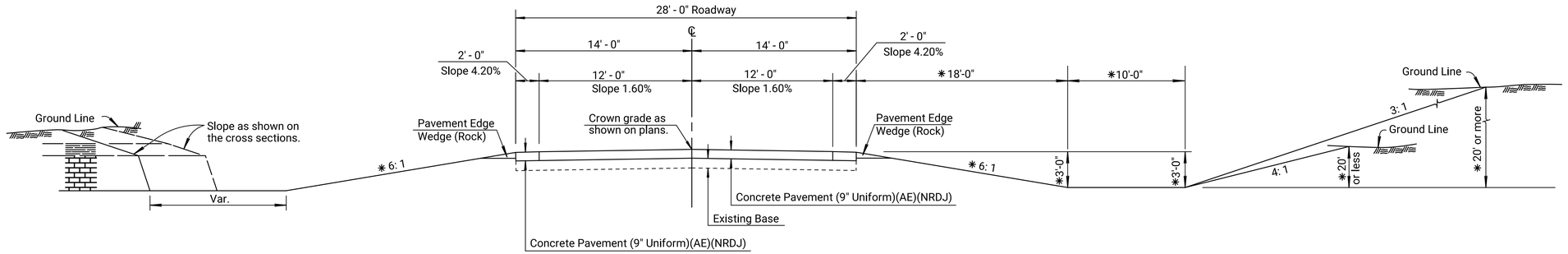
Signature Seal Sheet

RD048

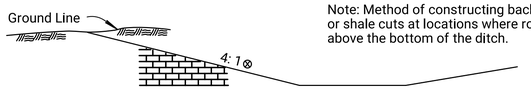
KDOT Graphics Certified 02-07-2018 Sh. No. 2

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	3	85

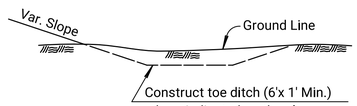


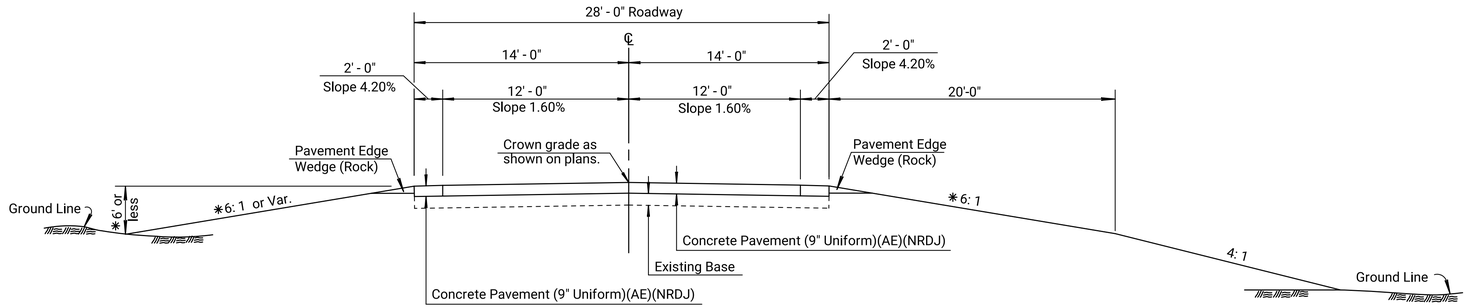
CUT SECTION
McDowell Creek Rd.



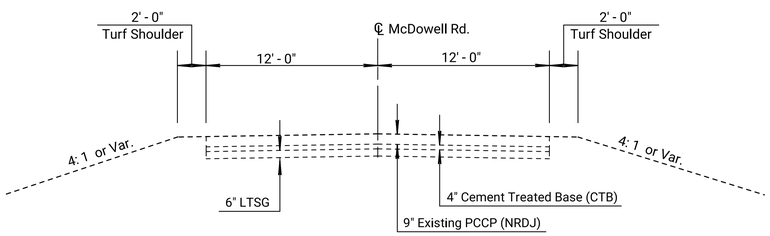
Note: Method of constructing backslope through shallow rock or shale cuts at locations where rock protrudes a short height above the bottom of the ditch.

⊗ Slope to be 3: 1 when depth of cut is 20' or more.





FILL SECTION
McDowell Creek Rd.

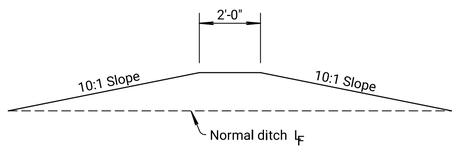


EXISTING TYPICAL SECTION
FOR INFORMATION ONLY

✳ Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

Note: Intersection of all slope lines shall be softened and rounded for pleasing appearance.

Ditch Plugs within the appropriate clear zone shall have side slopes of 10:1 or flatter.



SKETCH OF DITCH PLUG

NO.	DATE	REVISIONS	BY	APP'D
21	1-25-13	Removed Slope, Pvmt. Edge	S.W.K.	J.O.B.
20	5-20-09	8:1/6:1 over 10' fill mound ent./sd.rd.	S.W.K.	J.O.B.
19	1 1-10-04	Changed slope labels to percent	S.W.K.	J.O.B.
18	5-10-00	Rev. Ditch Plug Slope 10:1	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION GRADING & SURFACING

~~RD600~~

FHWA APPROVAL	5-21-2013	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. W.L.H.

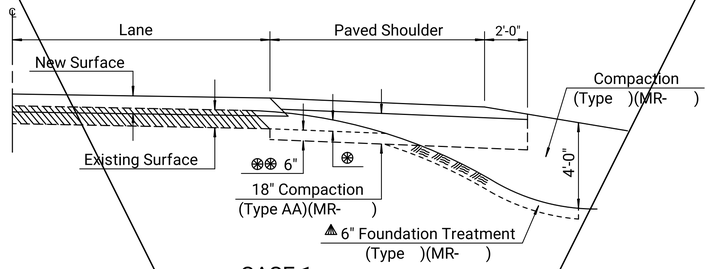
KDOT Graphics Certified 02-10-2022 Sh. No. 3

Plotted by : Stacy.Swann 21-FEB-2022 14:15
File : KA608301rts-01.dgn

KDOT Graphics Certified

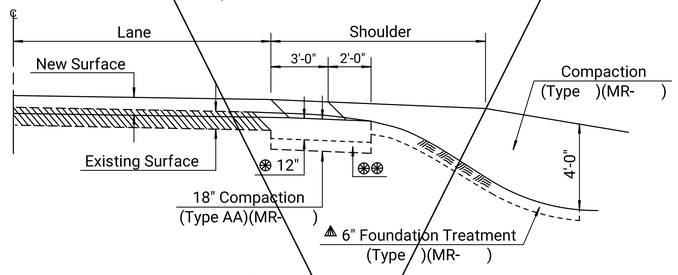
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	4	85

REHABILITATION



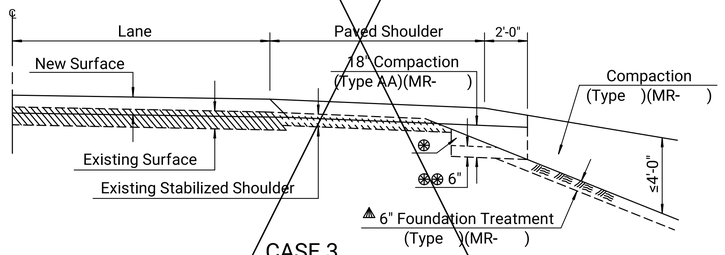
CASE 1

Overlay with Paved Shoulder



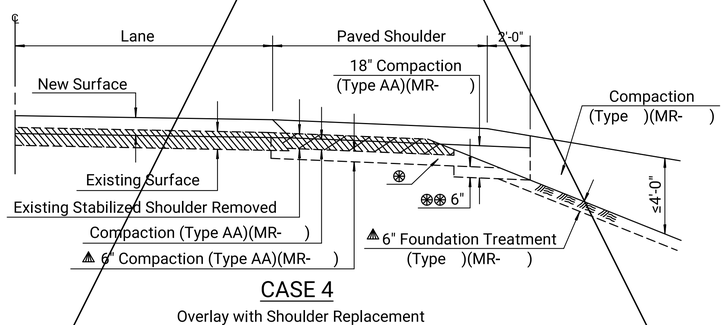
CASE 2

Overlay with Composite Shoulder



CASE 3

Overlay with Existing Paved Shoulder



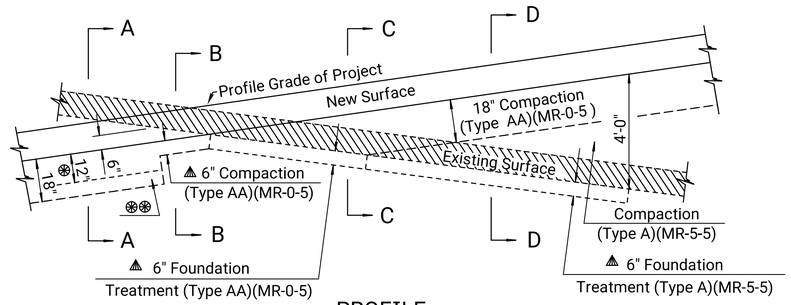
CASE 4

Overlay with Shoulder Replacement

❀ Excavation thru Cuts not Subgraded
❀❀ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.

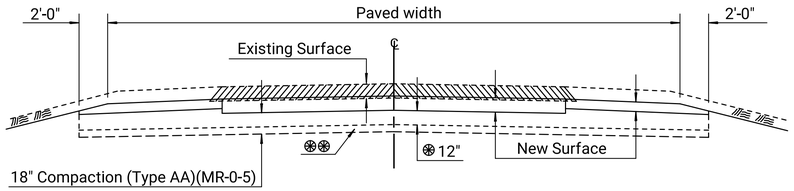
Note: These are 4 general cases. Specific compaction requirements are determined on a project-by-project basis.

RECONSTRUCTION

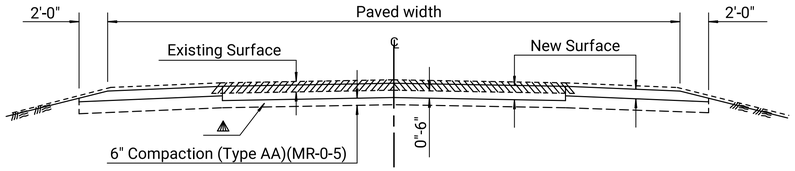


PROFILE

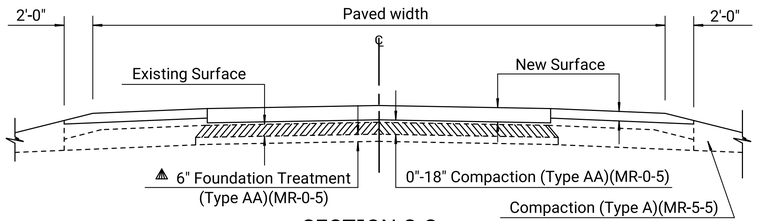
❀ Excavation thru Cuts not Subgraded
❀❀ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



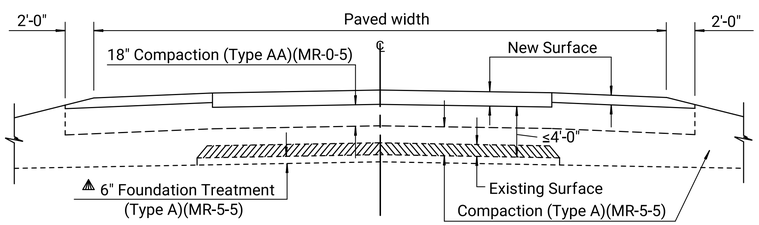
SECTION A-A



SECTION B-B

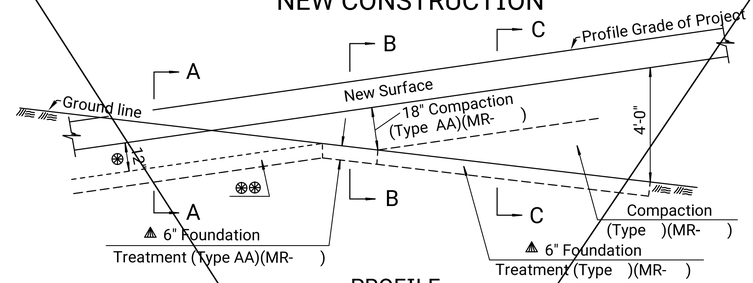


SECTION C-C



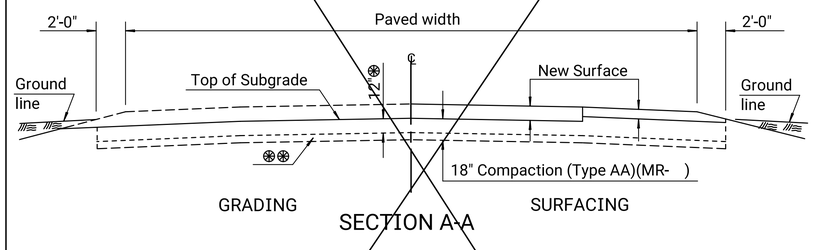
SECTION D-D

NEW CONSTRUCTION

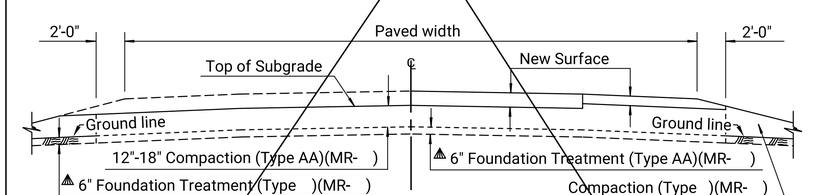


PROFILE

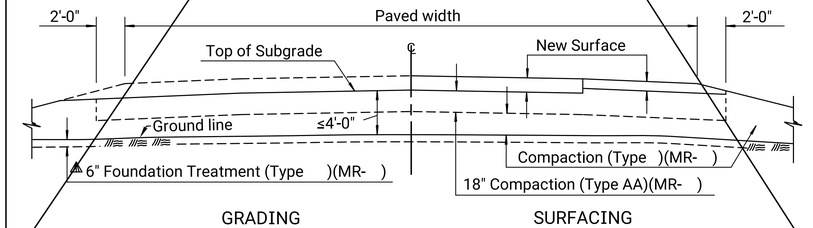
❀ Excavation thru Cuts not Subgraded
❀❀ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



SECTION A-A



SECTION B-B



SECTION C-C

General Note

For materials designated to be subgraded, compaction of soils, including shales, designated for backfill refer to Standard Drawing RD605A for details.

Unless otherwise noted on the Plans, compact all embankment, including side roads and entrances.

NO.	DATE	REVISIONS	BY	APP'D
5	10-17-1 1	Revised General Note	S.W.K.	J.O.B.
4	1-05-1 0	Added additional subsidiary comp.	S.W.K.	J.O.B.
3	2-16-05	Redrawn, Rev. Recon. Sec. C-C & D-D	S.W.K.	J.O.B.
2	5-29-98	Revised Reconstruction Section B-B	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FOUNDATION TREATMENT & COMPACTION OF EARTHWORK

~~RD605~~

FHWA APPROVAL 12-5-1 1		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 01-19-2022 Sh. No. 4

KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:36
File : KA608301rts-02.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	5	85

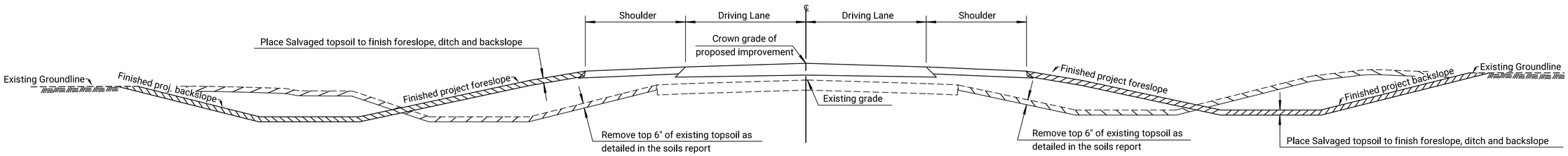
Note to Designer: Acceptable Topsoil locations on a project will be detailed in the Soils Report. The locations will be used in conjunction with the plans to measure a horizontal area in Sq. Yds of "Salvaged Topsoil" within the R/W limits.

GENERAL NOTE

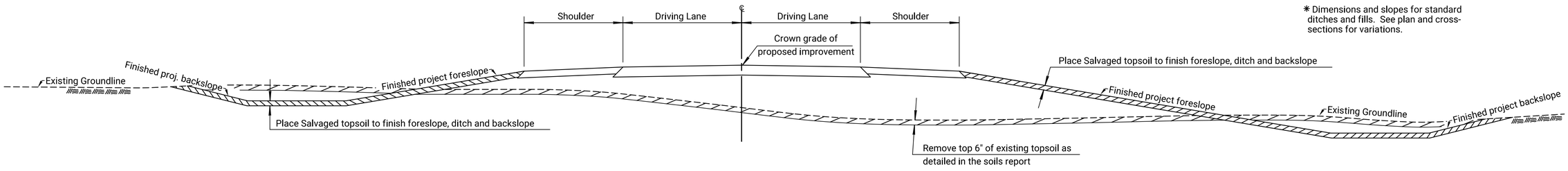
Adjust the cut and fill sections to accommodate the placement of the salvaged topsoil such that after placement the cross section will be at the final grade as shown on the plans.

Salvaging, Stockpiling and Placing Topsoil bid as "Salvaged Topsoil" in Square Yards. See KDOT Standard Specifications for details.

Soften and round the intersection of all slope lines for pleasing appearance.



RECONSTRUCTION/REHABILITATION OF EXISTING ROADWAY
(Removal and Placement of Salvaged Topsoil)



✱ Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

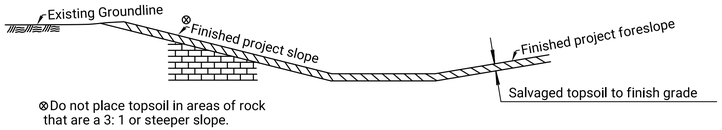
LEGEND

Topsoil to be Salvaged

Placement of Salvaged Topsoil

NEW ROADWAY ALIGNMENT
(Removal and Placement of Salvaged Topsoil)

Note: Method of showing backslope thru shallow rock or shale cuts at locations where rock protrudes a short height above the bottom of the ditch.



⊗Do not place topsoil in areas of rock that are a 3: 1 or steeper slope.

CUT SECTION

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	12-16-09	Initial Release	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SALVAGED TOPSOIL

RD599A

FHWA APPROVAL 12-16-09		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

KDOT Graphics Certified 03-28-2018

Sh. No. 5

KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:36
File : KA608301rss599a-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	6	85

GENERAL NOTE

THE GEOLOGICAL INFORMATION SHOWN ON THESE PLANS IS FROM STUDIES MADE IN THE FIELD AND REPRESENTS THE BEST INFORMATION AVAILABLE TO THE KANSAS DEPARTMENT OF TRANSPORTATION.

AT BORROW AREA LOCATIONS ADJACENT TO THE RIGHT OF WAY, UTILITY POLES MAY BE SET AT THE PERMANENT LOCATIONS PRIOR TO CONSTRUCTION AS APPROVED BY THE ENGINEER PROVIDED A MINIMUM VERTICAL CLEARANCE, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE, IS OBTAINED. THE CONTRACTOR WILL BE REQUIRED TO WORK AROUND THESE POLES TO COMPLETE THE WORK.

ALL BORROW TO BE OBTAINED FROM AREAS PROVIDED BY THE CONTRACTOR SHALL BE APPROVED BY THE ENGINEER, BOTH AS TO SUITABILITY OF MATERIAL AND SITE LOCATION. LOCATIONS WHICH, IN THE OPINION OF THE ENGINEER, CONTAIN UNSUITABLE MATERIAL OR WILL LEAVE AN UNSIGHTLY APPEARANCE ON THE PROJECT WILL NOT BE APPROVED.

CHANNELS SHALL BE CUT AT BOX CULVERTS (UNLESS OTHERWISE NOTED) TO FLOW LINE ELEVATIONS AND TO A WIDTH OF ONE FOOT OUTSIDE OF EACH OUTSIDE WALL AND WITH SLOPES 2 TO 1 PRIOR TO CONSTRUCTION OF THE CULVERT.

EMBANKMENT QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT SHOWN IN THE EARTHWORK QUANTITIES ARE SUBSIDIARY TO OTHER EARTHWORK ITEMS. MATERIAL FOR THE EMBANKMENT IS INCLUDED IN THE EXCAVATION QUANTITIES.

EXCAVATION REQUIRED FOR PLACING SELECT SOIL IS INCLUDED IN THE COMMON EXCAVATION QUANTITIES.

WHERE EASEMENTS ARE SHOWN ON RAILROAD RIGHT OF WAY, THE CONTRACTOR SHALL BE REQUIRED TO WORK AROUND AND NOT DISTURB THE RAILROAD COMMUNICATION OR SIGNAL POLES OR LINES.

EXCAVATION SHOWN TO BE WASTED SHALL BE WASTED ON SITES PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY, APPEARANCE, AND SITE LOCATION. LOCATIONS THAT, IN THE OPINION OF THE ENGINEER, WILL LEAVE AN UNSIGHTLY APPEARANCE WILL NOT BE APPROVED.

ALL TREES, HEDGE ROWS, SHELTERBELTS, AND WOODY SHRUBS NOT SHOWN TO BE REMOVED AND LOCATED BETWEEN THE CONSTRUCTION LIMITS AND THE RIGHT-OF-WAY LINE OR EASEMENT LINE SHALL BE SPARED UNLESS DIRECTED BY THE ENGINEER TO BE REMOVED. ALL TREES WITHIN THE APPROPRIATE CLEAR ZONE SHALL BE REMOVED.

SOIL FOR EMBANKMENT CONSTRUCTION: ALL SOIL USED IN THE TOP 18" OF THE EMBANKMENT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: 10 ≤ PI ≤ 30 AND 20 ≤ LL ≤ 50. SOILS WHICH CONTAIN SUBSTANTIAL ORGANIC MATERIAL, SUCH AS THOSE CLASSIFIED AS OL OR OH ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487) SHOULD NOT BE USED TO CONSTRUCT THE EMBANKMENT OR SUBGRADE. THE ORGANIC MATERIAL MAY BE USED AS SELECT SOIL TO CAP THE SIDESLOPES OF THE EMBANKMENT.

SCALE

PLAN: Lat. & Long. 50' 0 50' 100'

PROFILE: Horiz. same as above

Vert. 5 0

PROJECT SURVEY CONTROL

HORIZONTAL PROJECT DATUM: Kansas Regional Coordinate System (KRCS) Zone 8, Manhattan NAD 83 (2011) using Geoid 18

VERTICAL DATUM: NAVD 1988 Datum

DATUM BENCH MARK:
BM Q342 - Standard NGS disc stamped "Q342 RESET 1998;" listed as "Q342D" in 1997 70-31 K-5086-01 KDOT As-Built plans. These As-Built plans has the NGVD 29 elevation listed as 1,114.49'. This elevation was converted to NAVD 1988 and the datum elevation after conversion is 1,114.91'.
Elev. = 1,114.91'

UTILITIES:

Morris County RWD #1
609 Main St.
Dwight, KS 66849
785-482-3303

Level 3/CenturyLink
100 CenturyLink Drive.
Monroe, LA 71203
877-366-8344

ATT Distribution
USIC:
800-778-9140

NOTE:
No Utilities Present
Within Project Location

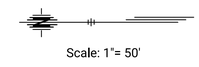
℄ McDowell Creek Rd. P.O.T. Sta. 48+00.18
N. 563,806.785 E. 18,455,362.045
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (0.1' Below Concrete Surface)
2. Conc. Nail & KDOT Washer in Top Wood Guardrail Post 25.0' E.S.E.
3. Conc. Nail & KDOT Washer in Top Wood Guardrail Post 25.1' E.
4. ℄ Bridge N. EWS 84.6' S.

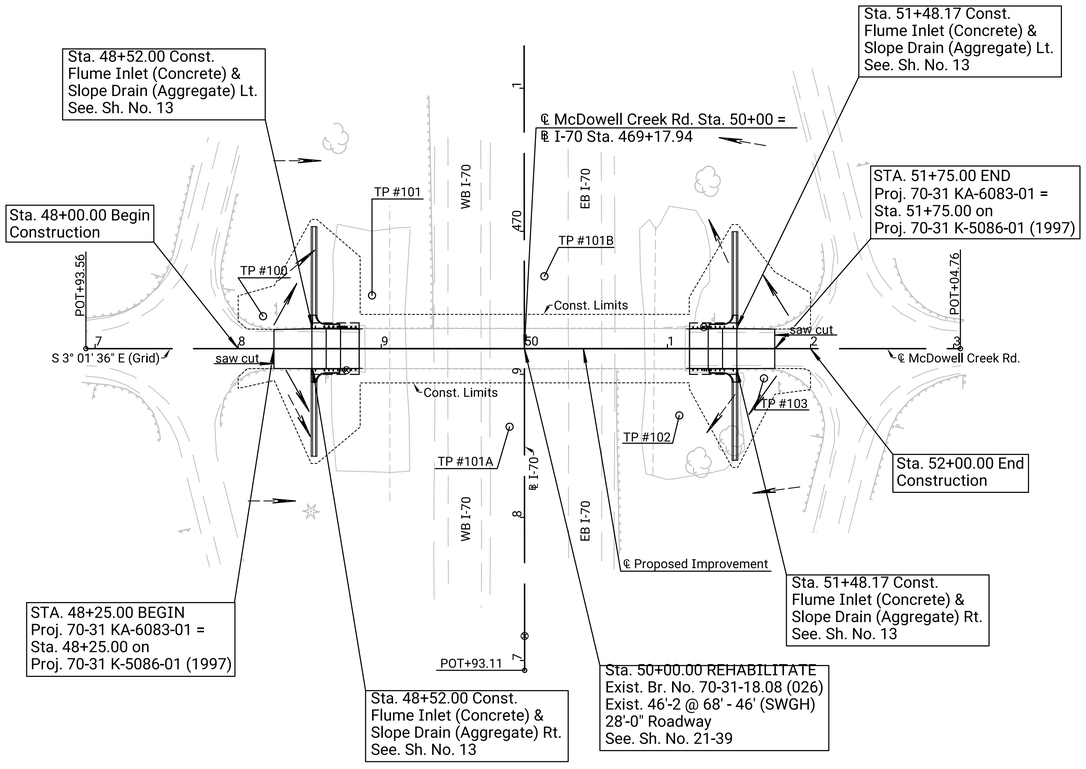
℄ I-70 P.O.T. Sta. 466+93.11 = P.O.T. Sta. 466+93.11 on KDOT Proj. 70-31 K-5086-01 (1997)
N. 563,595.168 E. 8,455,148.067
1. Found ½" Rebar (1.2' Deep)
2. Rivet & KDOT Washer in Top Median Inlet (BM 10A) 21.5' E.
3. Edge of Shoulder WB I-70 23.7' N.
4. Edge of Shoulder EB I-70 24.1' S.

℄ McDowell Creek Rd. P.O.T. Sta. 50+00.00 = ℄ I-70 P.O.T. Sta. 469+17.94 = ℄ I-70 Bridge = P.O.T. Sta. 469+18.01 on KDOT Proj. 70-31 K-5086-01 (1997)
N. 563,607.064 E. 8,455,372.605
1. N.O.R.A.

℄ McDowell Creek Rd. P.O.T. Sta. 51+75.00
N. 1563,432.308 E. 8,455,381.846
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (0.1' Below Concrete Surface)
2. Conc. Nail & KDOT Washer in Top Wood Guardrail Post 16.6' W.N.W.
3. E. Face, E. Leg "I-70 East Topeka" Sign at Ground 23.1' W.
4. ℄ Bridge S. EWS 60.1' N.

℄ I-70 P.O.T. Sta. 491+99.72 = P.O.T. Sta. 492+00.00 on KDOT Proj. 70-31 K-5086-01 (1997)
N. 563,729.779 E. 8,457,651.058
1. Found ½" Rebar (1.0' Deep)
2. ℄ Opening Median Inlet 17.0' E.
3. Edge of Shoulder WB I-70 23.9' N.
4. Edge of Shoulder EB I-70 24.0' S.





Traverse Point #100
N. 563,790.836 E. 8,455,385.563
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (0.2' Deep)
2. 22.75' Lt. of ℄ McDowell Creek Rd. Sta. 48+17.18

Traverse Point #101
N. 563,715.515 E. 8,455,404.121
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (Flush w/ Riprap)
2. 37.28' Lt. of ℄ McDowell Creek Rd. Sta. 48+93.38

Traverse Point #101A
N. 563,614.683 E. 8,455,317.529
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (0.2' Deep in Median)
2. 54.53' Rt. of ℄ McDowell Creek Rd. Sta. 49+89.48

Traverse Point #101B
N 563,595.938 E 8,455,423.858
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (0.2' Deep in Median)
2. 50.66' Lt. of ℄ McDowell Creek Rd. Sta. 50+13.83

Traverse Point #102
N. 563,496.625 E. 8,455,331.699
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (Flush w/ Riprap)
2. 46.64' Rt. of ℄ McDowell Creek Rd. Sta. 51+08.12

Traverse Point #103
N. 563,438.906 E. 8,455,360.712
1. Set ½" Rebar w/ KDOT Orange Plastic Cap (0.2' Deep)
2. 20.73' Rt. of ℄ McDowell Creek Rd. Sta. 51+67.30

B.M. #10 - Found " □ " Cut N. End W. Handrail of Bridge
15.00' Rt. of McDowell Creek Rd. ℄ Sta. 48+75.50 Elev. = 1,155.67'

B.M. #10A - Set Rivet & KDOT Washer in I-70 Median Drain
200.78' Rt. of McDowell Creek Rd. ℄ Sta. 49+99.97 Elev. = 1,134.88'

B.M. #11 - Chiseled " □ " Cut on S. End E. Handrail of Bridge
15.00' Lt. of McDowell Creek Rd. ℄ Sta. 51+25.30 Elev. = 1,155.72'

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED
6/2021	S. Swann		
8/2021	M. R. Remboldt		

Plotted by : Stacy.Swann 21-FEB-2022 14:10
File : KA6083O1rpl-01.dgn

KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
McDOWELL CREEK RD.
STA. 46+93.56 TO STA. 52+04.76

KDOT Graphics Certified 02-21-2022 Sh. No. 6

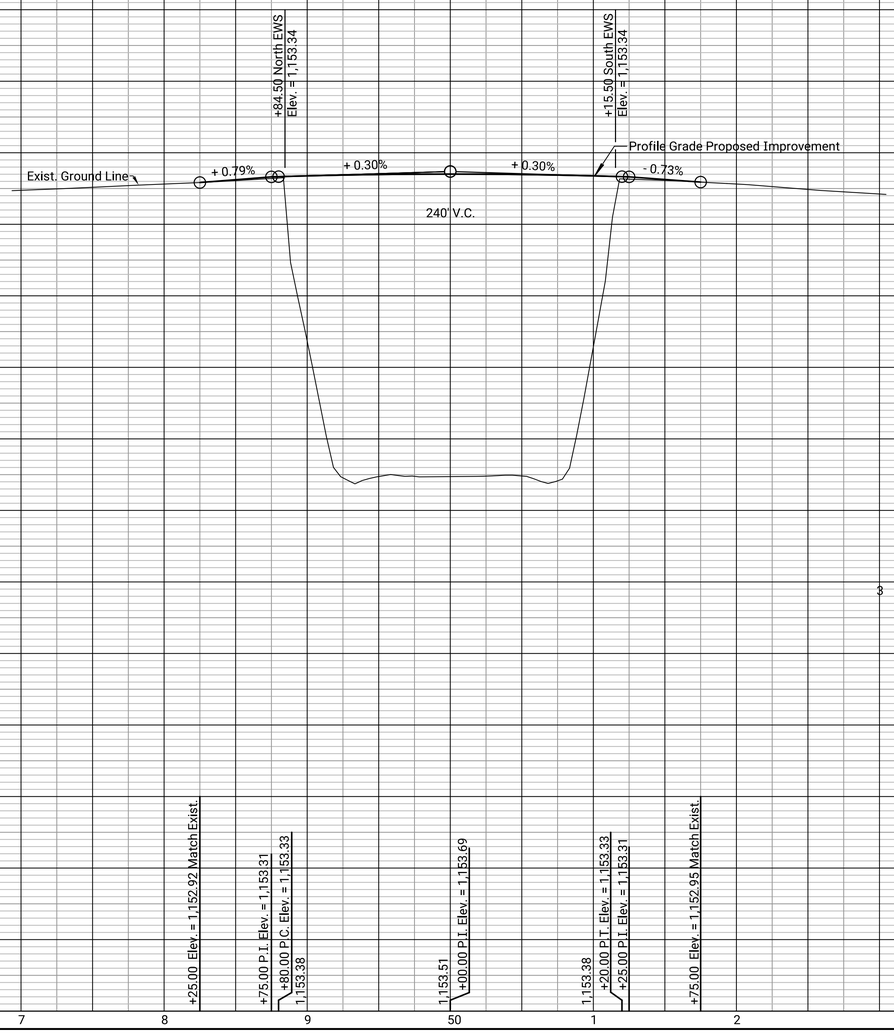
KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	7	85

Earthwork Balance:

61	cu. yds. Common Excavation (VMF= 0.78)
332	cu. yds. Common Excavation (Contractor Furnished) (VMF= 0.78)
280	cu. yds. Rock Excavation (Existing Pavement) (VMF= 1.00)
307	cu. yds. Embankment

Includes 280 cu. yds. of existing pavement to be wasted



KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
McDOWELL CREEK RD.
STA. 46+93.56 TO STA. 52+04.76

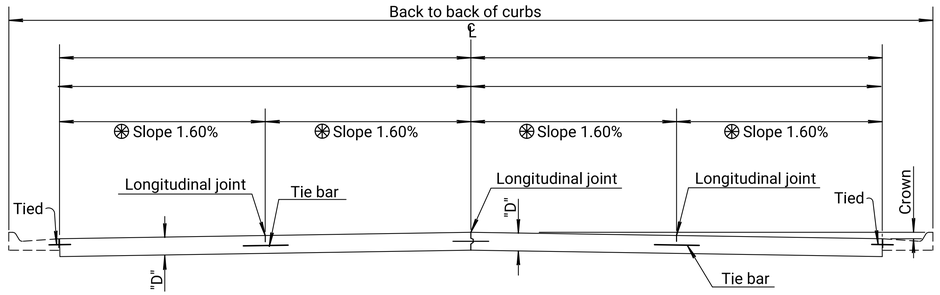
KDOT Graphics Certified 01-19-2022 Sh. No. 7

KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:36
File : KA608301rpr-01.dgn

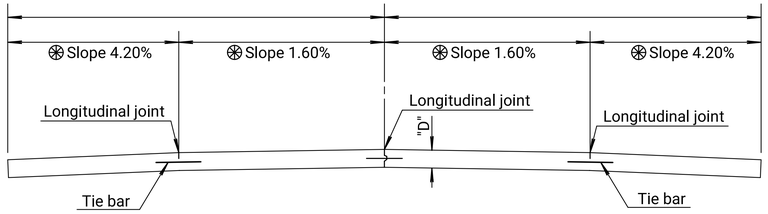
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	8	85

Note: Designer to add applicable dowel sizes.



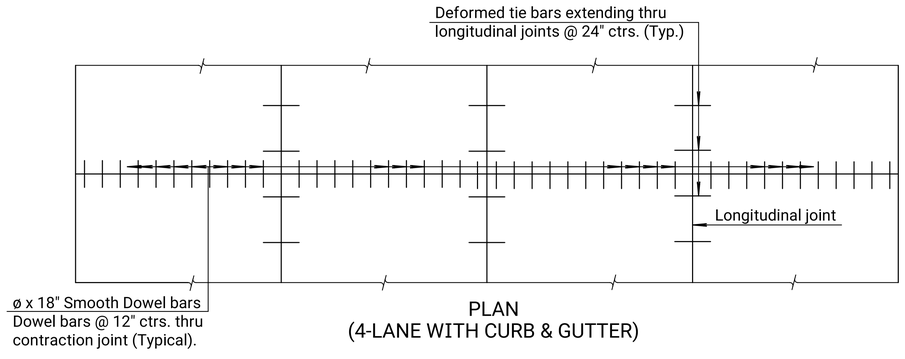
For Curb & Gutter details
See Standard Drawing RD635.

TRANSVERSE SECTION
(4-LANE WITH CURB & GUTTER)

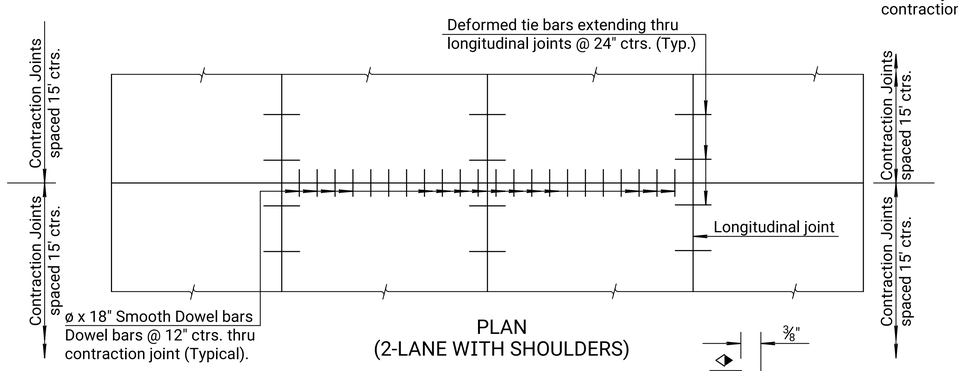


TRANSVERSE SECTION
(2-LANE WITH SHOULDERS)

Normal cross slopes. See Typical Section or Cross Sections for variations.



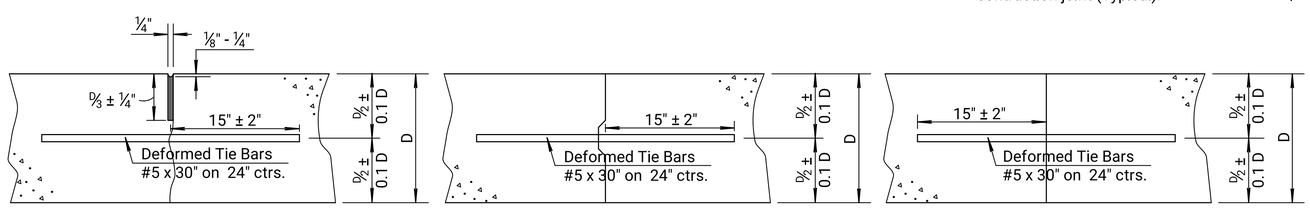
PLAN
(4-LANE WITH CURB & GUTTER)



PLAN
(2-LANE WITH SHOULDERS)

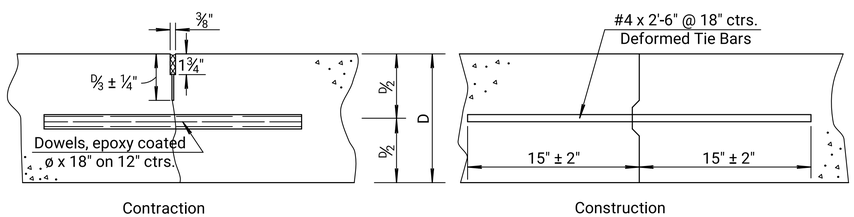
DOWEL SIZE	
D (in.)	Diameter
6 < D < 9	1"
9 ≤ D < 11	1¼"
D ≥ 11	1½"

PAVEMENT DEPTH
D= 9"



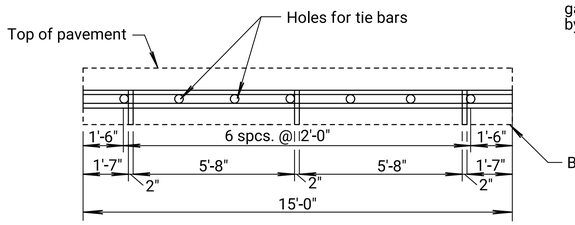
Note: For longitudinal construction joints the contractor has the option of using either the keyed or butt type. Place deformed tie bars mid-depth of the shoulder.

LONGITUDINAL JOINTS



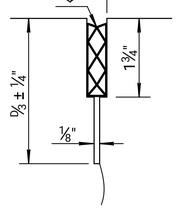
TRANSVERSE JOINTS

Note: Construct contraction joints at plan locations or at the Engineer's direction.
When necessary to interrupt continuous placement for a substantial length of time or at the end of a day's paving, the Contractor has the option of ending placement at a contraction joint or with a construction joint located a minimum of five (5) feet from a contraction joint. Construct either joint type by placing a header at the end of the pour or by paving past the joint location. After the concrete has hardened, saw joint and drill holes for tie bars or dowels.



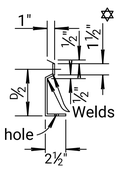
METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT

To be used only against forms, do not extend through contraction joints.
For automated placement tie bars are spaced at uniform 24" centers.
✡ Use snap-in leg or other approved design in lieu of welded leg.

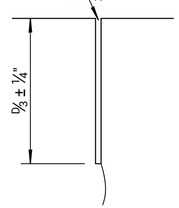


DETAIL OF SEALED
JOINT SAWCUT

Make an initial ⅛" saw cut (D/3 ± ¼" depth); the second ⅜" saw cut is a separate operation done after concrete has gained sufficient strength to avoid spalling as determined by the Engineer.



SECTION OF
RECESSED
FORM LEG



DETAIL OF NON-SEALED
JOINT SAWCUT

Make only the initial ⅛" saw cut after concrete has gained sufficient strength to avoid spalling as determined by the Engineer.

GENERAL NOTE

Epoxy coat all deformed tie bars that are straight. Patch any damage to the epoxy coating in accordance with the Standard Specifications.

Use billet steel Grade 40 reinforcing for deformed tie bars that require bending, may be epoxy coated at the Contractor's option.

Place pressure relief joint at the end of the bridge approach pavement slab (no bars through joint). For details of pressure relief joint see Standard Drawing RD712.

Use load transfer devices as shown in details at all construction joints on mainline pavement unless otherwise noted. Shoulder contraction joints have no dowels unless specifically shown on the plans.

✧ Fill all sawed joints on the project in accordance with the Standard Specifications with the exception of those joints in pavement constructed over Cement or Asphalt Treated Base.

⚹ Use single saw cut, ⅛" wide, joint in pavement constructed over Cement or Asphalt Treated Base (Non-Sealed Joint Sawcut). Use single saw cut, ⅛" wide, joint for shoulder pavement adjacent to mainline pavement constructed over Asphalt or Cement Treated Base (Non-Sealed Joint Sawcut). See detail this sheet.

Shape all keyed joints similar to section of recessed form leg as shown on this sheet.

Evenly space tie bars along the length of slab with no tie bar within 12" of contraction joint. All longitudinal joints are tied.

NO.	DATE	REVISIONS	BY	APP'D
19	5-17-13	Revised Note, Longitudinal Joints	S.W.K.	J.O.B.
18	3-21-12	Revised Table, Dowel Size	S.W.K.	J.O.B.
17	1-9-12	Added Detail, Non Sealed Joint	S.W.K.	J.O.B.
16	8-18-10	Revised Dowel Size & Notes	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT DOWEL JOINTED NON-REINFORCED

RD708

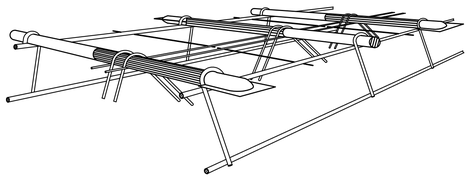
FHWA APPROVAL	10-23-13	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 01-19-2022 Sh. No. 8

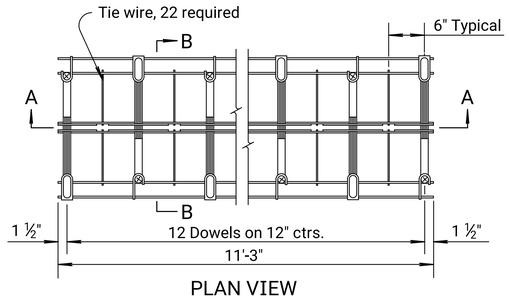
KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:36
File : KA608301rss708-01.dgn

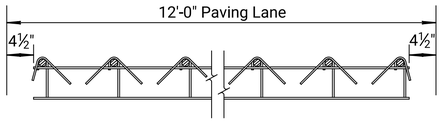
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	9	85



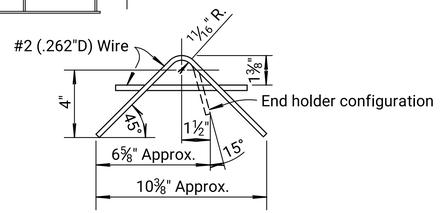
PERSPECTIVE VIEW

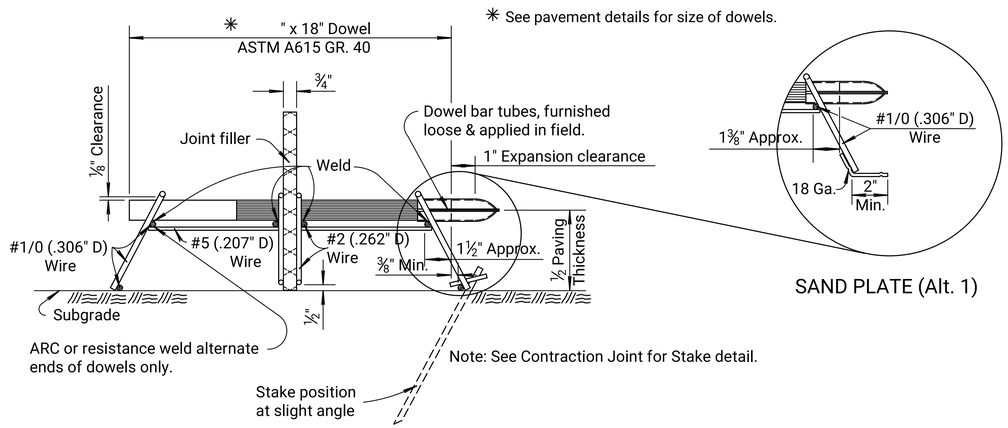


PLAN VIEW



SEC. A-A





SEC. B-B

EXPANSION JOINT

GENERAL NOTE

Coat each dowel bar with an epoxy coating that meets the standard specifications. Uniformly apply the powdered epoxy coating according to accepted practices and the coating manufacturer's recommendations. The coating need not be applied to the end faces of the bars and will not be required within 2" of the end which will be fixed in the supporting bracket by welding.

Cut the dowel bars to length in such a manner to result in no appreciable deformation of the ends.

Dowel Baskets

Wire sizes shown are minimum required.

Stake baskets to subgrade as shown. Use ramset or similar type fastener with clip when subgrade condition requires it.

Sides held together with tie wire, allowing quick separation of sides and insertion of expansion material, provided in the field.

Use one length of Preformed Expansion Joint filler (Type B), or other approved material as determined by the Engineer, cut to fit crown and subgrade for each lane of pavement as expansion joint filler.

Stretch a string line between the pavement forms along the center line of the joint.

Visually inspect bond breaker was applied to the dowel bars in accordance with KDOT's Standard Specifications prior to placing concrete pavement.

Carefully level the entire joint assembly so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Replace any coating scraped off the dowels during assembly.

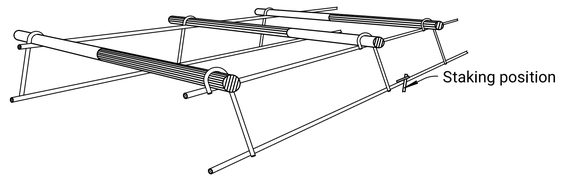
Check each completed contraction joint assembly to be certain the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab unless otherwise shown on the plans. Check the dowels to be certain they are level and will remain in a position parallel with the finished surface of the slab.

Place concrete over and adjacent to the joint in accordance with the requirements of the Standard Specifications.

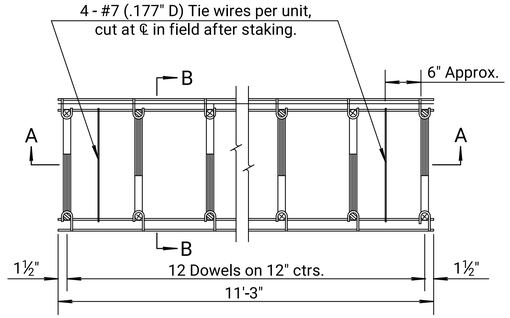
After completion of machine finishing, floating, and straight edging the surface, carefully remove the concrete over the filler and edge the joint with an edger of the proper size.

Install expansion joint material in the field.

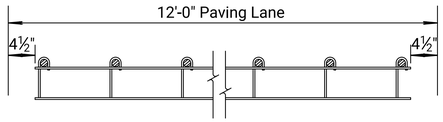
Alternative designs may be used in lieu of the type shown as approved by the Engineer.



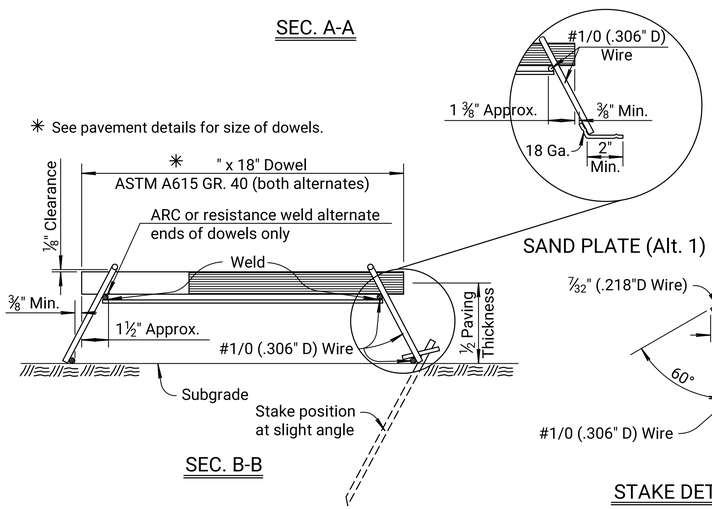
PERSPECTIVE VIEW



PLAN VIEW



SEC. A-A



SEC. B-B

CONTRACTION JOINT

STAKE DETAIL

(6 Pieces minimum required)

GENERAL NOTE

Coat each dowel bar with an epoxy coating that meets the standard specifications. Uniformly apply the powdered epoxy coating according to accepted practices and the coating manufacturer's recommendations. The coating need not be applied to the end faces of the bars and will not be required within 2" of the end which will be fixed in the supporting bracket by welding.

Cut the dowel bars to length in such a manner to result in no appreciable deformation of the ends.

Dowel Baskets

Wire sizes shown are minimum required.

Stake baskets to subgrade as shown. Use ramset or similar type fastener with clip when subgrade condition requires it.

Stretch a string line between the pavement forms along the center line of the joint. Carefully mark the position of the joint so the saw cut will coincide with the center line of the joint.

Visually inspect bond breaker was applied to the dowel bars in accordance with KDOT's Standard Specifications prior to placing concrete pavement.

Carefully level the entire joint assembly so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Replace any coating scraped off the dowels during assembly.

Check each completed contraction joint assembly to be certain the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab unless otherwise shown on the plans. Check the dowels to be certain they are level and will remain in a position parallel with the finished surface of the slab.

Place concrete over and adjacent to the joint in accordance with the requirements of the Standard Specifications.

Alternative designs may be used in lieu of the type shown as approved by the Engineer.

NO.	DATE	REVISIONS	BY	APP'D
9	6-3-15	Rem. Opt., Mechanical Placement	T.T.R.	S.W.K.
8	2-15-06	Chg. Grade 60 to Grade 40 Steel	S.W.K.	J.O.B.
7	5-5-04	Revision on Epoxy coating	S.W.K.	J.O.B.
6	4-9-03	Rev. General Note on Epoxy coating	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONTRACTION & EXPANSION JT. DOWEL ASSEMBLIES

RD735

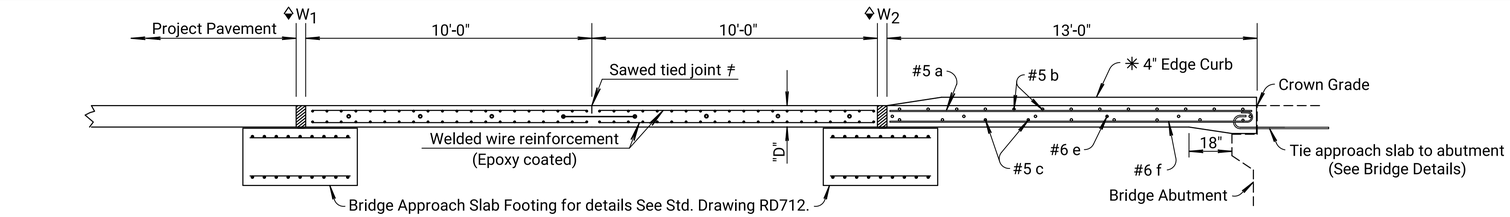
FHWA APPROVAL	3-30-16	APP'D.	SCOTT W. KING
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Hecht

KDOT Graphics Certified 11-10-2021 Sh. No. 9

KDOT Graphics Certified

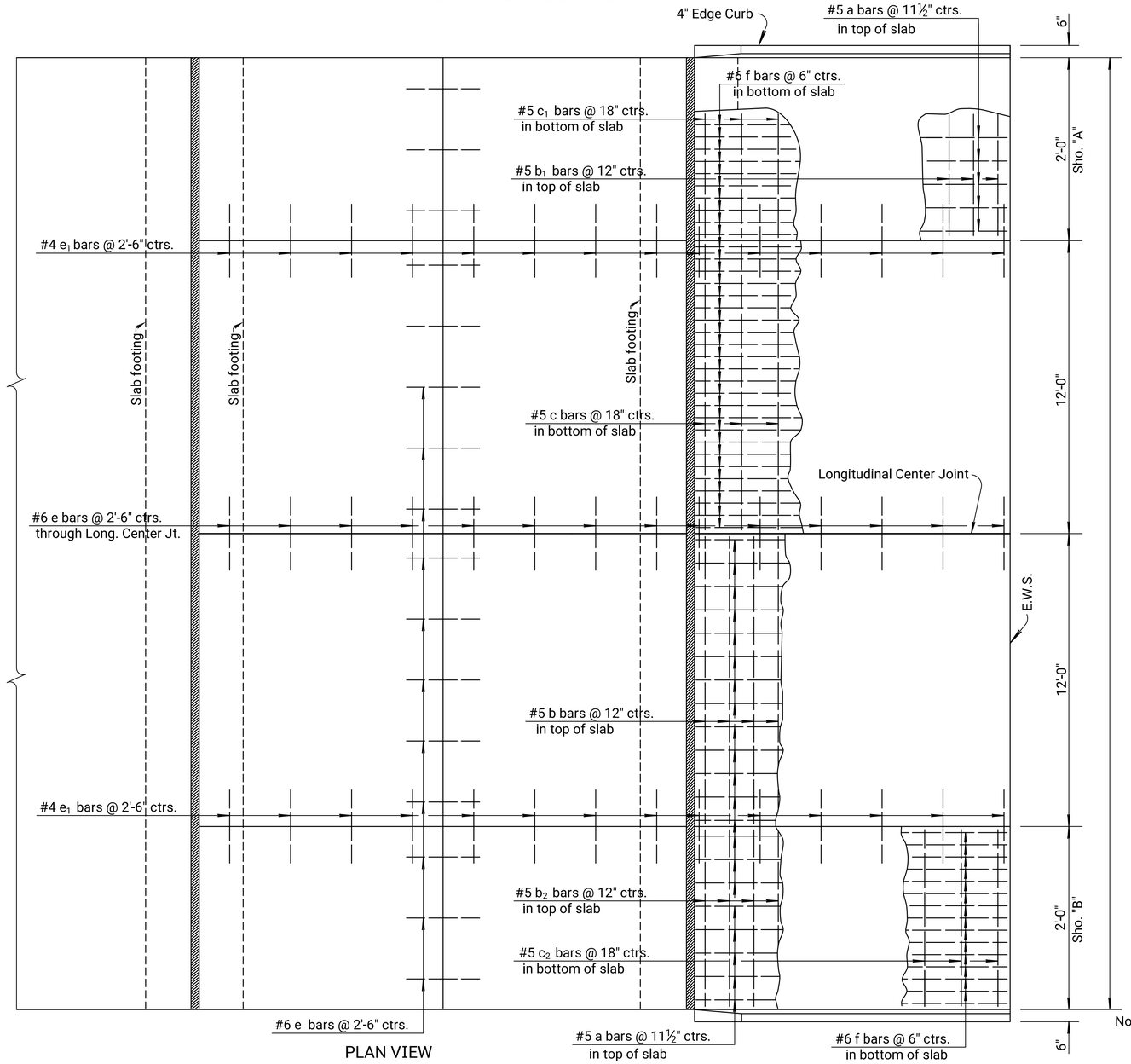
Plotted by : Stacy.Swann 08-FEB-2022 14:37
File : KA608301rss735-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	10	85



"D" Thickness = Thickness of Project Concrete Pavement (10" minimum).

LONGITUDINAL SECTION



PLAN VIEW

✳ For details of 4" Edge Curb, See Standard Drawing RD711.

◆ W_1 and W_2 for Expansion/Pressure Relief Joint width and details See Standard Drawing RD712.

≠ Contractor has the option of substituting a Tied Keyed Construction Joint.

GENERAL NOTE

Special Concrete Bridge Approach shall be paid for as Sq. Yds. of Concrete Pavement (10" Unif.)(AE)(Br. App.) and includes all work and materials required to construct the approach slab as shown on this sheet.

All work and materials required for installation of expansion joints and pressure relief joints shall be subsidiary to this bid item.

At the Contractor's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.

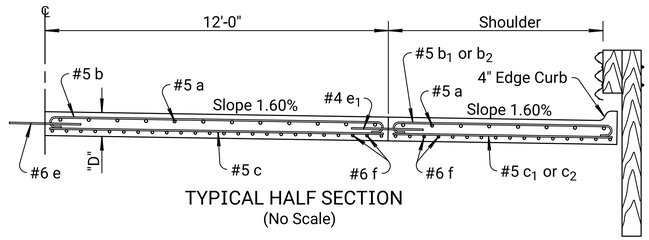
All reinforcing steel shall be epoxy coated.

See Standard Drawing RD711 for details of joints, welded wire reinforcement and edge curb.

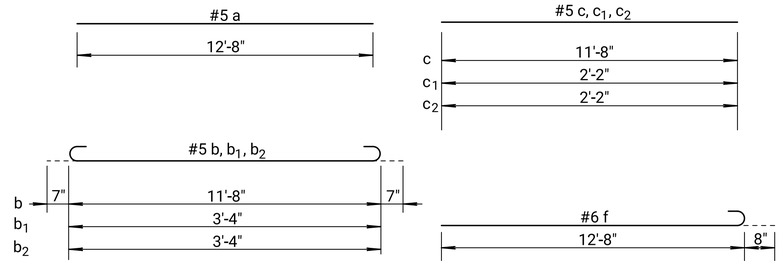
Clearance from the face of concrete for all reinforcing steel shall be 2 inches.

Standard reinforcing bar hooks in accordance with the latest ACI specifications shall be used throughout.

The pressure relief joint shall be omitted when the concrete bridge approach pavement abuts asphalt pavement.



TYPICAL HALF SECTION
(No Scale)



Note: All dimensions are out to out on bars unless noted otherwise.

BENDING DIAGRAMS

BILL OF MATERIALS

Bar Schedule

Bar	a	b	b_1	b_2	c	c_1	c_2	e	e_1	f	
No.	32	26	13	13	18	9	9	26	28	28	
Size	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	
Length	12'-8"	12'-10"	3'-4"	3'-4"	11'-8"	2'-2"	2'-2"	3'-0"	3'-0"	13'-4"	

Reinforcing Steel (Grade 60) (Epoxy Coated)	2,456 lbs.
Concrete Pavement (10" Unif.)(AE)	104.11 Sq. Yds.
Expansion Jt. Membrane Sealant	28.00 Lin. Ft.
Pressure Relief Jt. Membrane Sealant	28.00 Lin. Ft.

Note: Quantities listed for one approach slab only. Two required per bridge. Reinforcing steel and joint lengths shown for information only.

NO.	DATE	REVISIONS	BY	APP'D
12	4-04-13	Rev. Exp./Pr. Relief Joint Dim.	S.W.K.	J.O.B.
11	9-09-09	Revised Reinforcing Steel listing	S.W.K.	J.O.B.
10	5-14-09	Revised pressure relief jt. material	S.W.K.	J.O.B.
9	10-30-08	Added guardrail post detail at curb	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE APPROACH PAVEMENT NORMAL APPROACH

~~RD713~~

FHWA APPROVAL	5-21-2013	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 01-19-2022

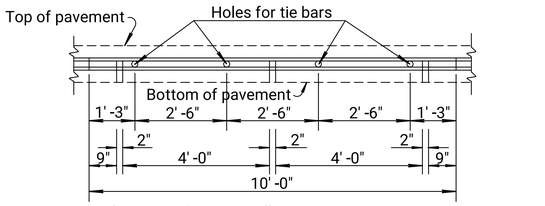
Sh. No. 10

KDOT Graphics Certified

Note to Designer: The designer shall be responsible for designating pavement thickness and computing reinforcing steel and concrete quantities and dimensions necessary to complete this sheet.

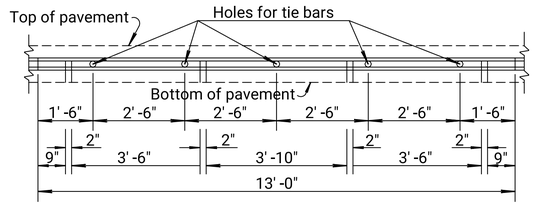
Plotted by : Stacy.Swann 08-FEB-2022 14:37
File : KA608301rss713-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	11	85



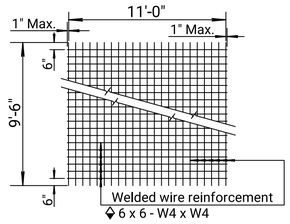
To be used only against forms. Shall not extend through contraction joints.

METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT (10'-0")



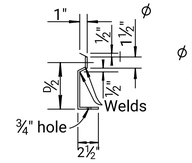
To be used only against forms. Shall not extend through contraction joints.

METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT (13'-0")



TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

◆ Note: Epoxy coated #3 bars longitudinally @ 12" ctrs. & #3 bars transversely @ 18" ctrs. may be substituted for each layer of epoxy coated welded wire reinforcement.



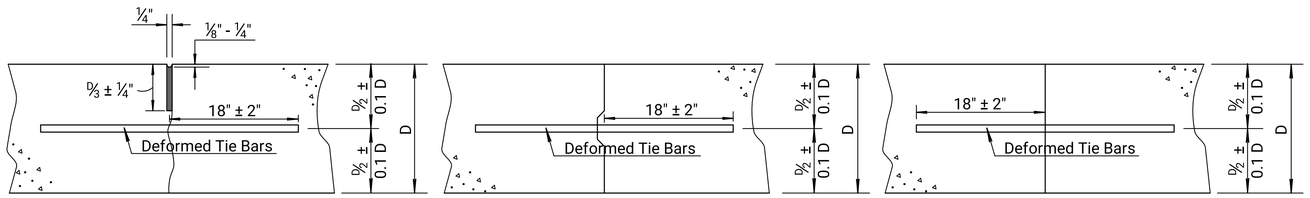
SECTION OF RECESSED
FORM LEG

ϕ Snap-in leg or other approved designs may be used in lieu of welded leg.

DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

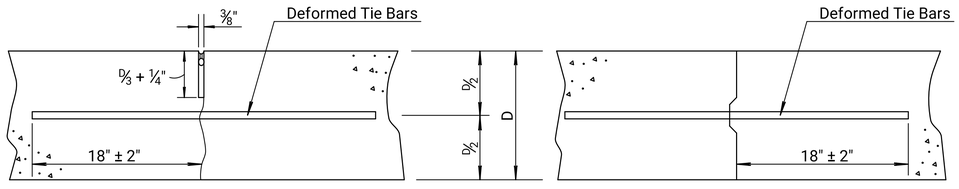
The lap shall extend beyond the first transverse or bag wire of each sheet.

The sheet shall be wired securely at the edges and at intervals not to exceed 2'-6" for the full width of the sheet. Approximate weight of welded wire reinforcement = 58 lbs. per 100 sq. ft. Other methods for fastening the sheets of welded wire reinforcement at the laps may be used with the approval of the Engineer.



LONGITUDINAL JOINTS

Note: For longitudinal construction joints the contractor has the option of using either the keyed or butt type. Place deformed tie bars mid-depth of the shoulder.



TRANSVERSE JOINTS

Note: A construction joint is required when the concrete placement has been interrupted for a substantial length of time or at the end of a day's placement.

GENERAL NOTES

All work shall be done in conformity with the Standard Specifications applicable to the project.

The cost of all bars and joint material shown on this sheet is to be included in the bid price for Concrete Pavement.

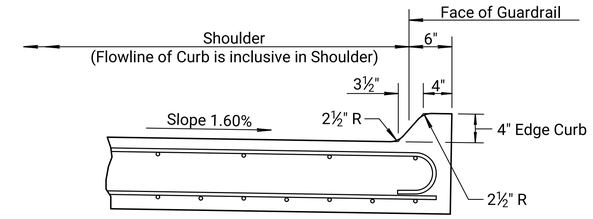
At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.

All sawed joints on this project shall be filled with sealant in accordance with Standard Specifications.

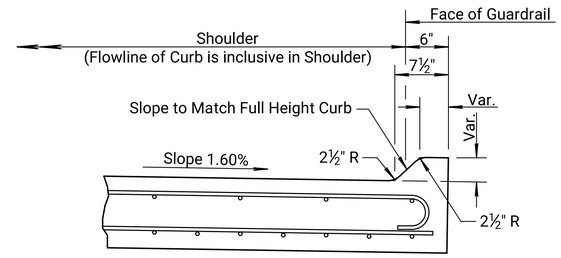
The 4 inch edge curb shall be constructed integral with the approach slab shoulder.

All materials and work required for this construction shall be Subsidiary to the concrete approach slab.

Tie bars shall be evenly spaced along the length of the slab and no tie bars shall be within 12" of contraction joint.

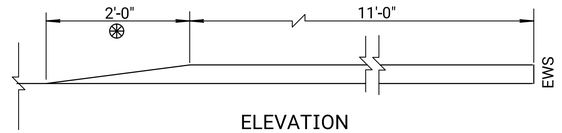


SECTION A-A

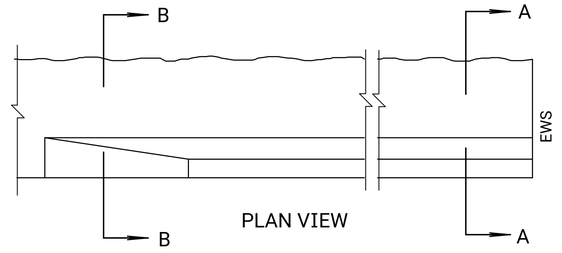


SECTION B-B

⊛ No 4" Curb transition when adjacent to Flume Inlet.



ELEVATION



PLAN VIEW

4" EDGE CURB DETAIL

NO.	DATE	REVISIONS	BY	APP'D
13	5-17-13	Revised Note, Longitudinal Joints	S.W.K.	J.O.B.
12	5-1 4-09	Pres. Relief Jt. to RD712/tie bar lab.	S.W.K.	J.O.B.
11	10-23-08	Revised Sec. A-A and Sec. B-B	S.W.K.	J.O.B.
10	10-3-07	Add. manufacturer jt. size recom'd.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS
FOR CONCRETE
BRIDGE APPROACH PAVEMENT

RD711

FHWA APPROVAL	10-23-13	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

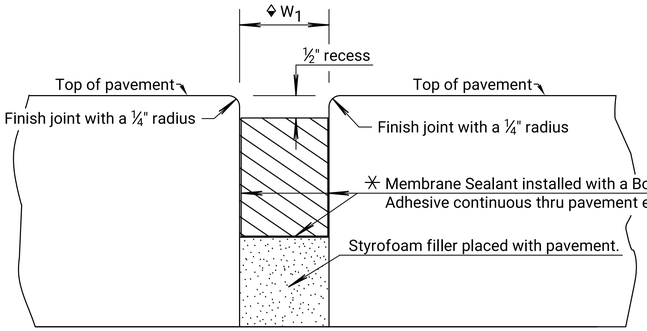
KDOT Graphics Certified 11-10-2021 Sh. No. 11

KDOT Graphics Certified

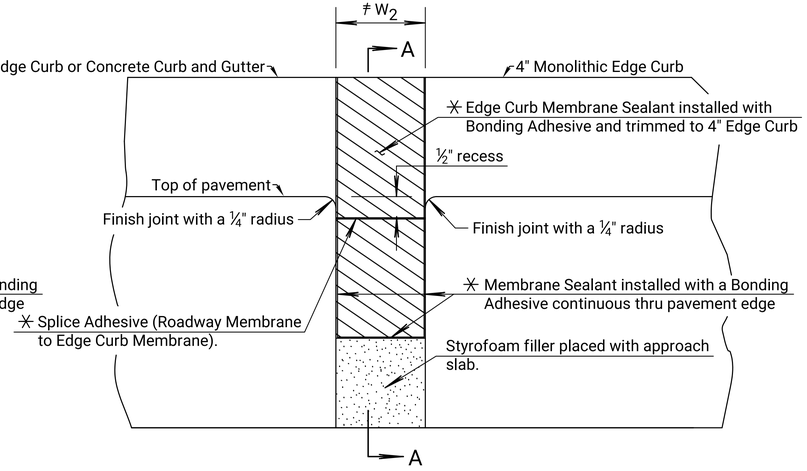
Plotted by : Stacy.Swann 08-FEB-2022 14:37
File : KA608301rss711-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	12	85

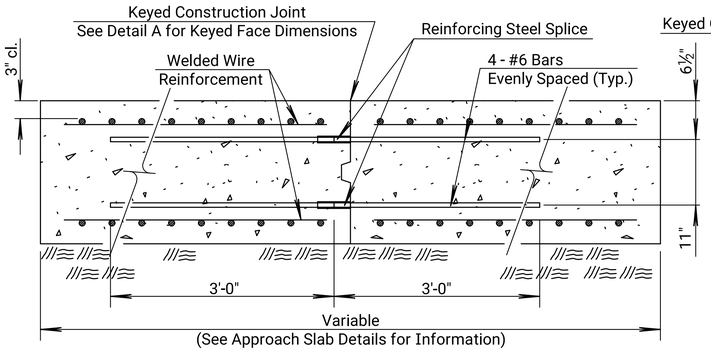
Note to Designer: For Membrane Sealant Expansion Joint on Non-skewed Bridges the maximum length of expansion is: 380' for Steel Bridges, 410' for Concrete Bridges.

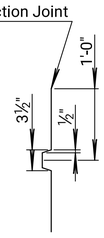


ELEVATION PRESSURE RELIEF JT.

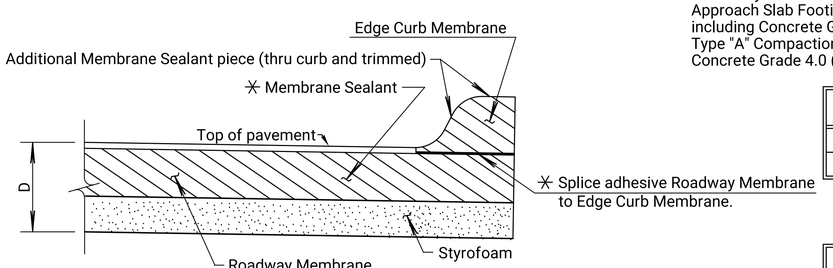


ELEVATION EXPANSION JT.





DETAIL A



SECTION A-A

(See Std. Drawing RD711 for details of 4" Edge Curb.)

GENERAL NOTES

EXPANSION/PRESSURE RELIEF JOINTS

See Concrete Bridge Approach Pavement standard drawings for location of expansion and pressure relief joints.

Form the joint opening prior to placement of the pavement approach. Remove the material used to form the joint after the pavement approach has been in place for a minimum of 6 days.

Clean and construct the joint only after the concrete in the approach slab has cured for a minimum of 7 days.

Thoroughly clean the joint by sandblasting and by high pressure air blast to remove all laitance and contaminants from the joint. When any joint is shaped by saw cutting in lieu of forming, blast the joint with water prior to sandblasting and air cleaning.

Accomplish sandblasting in two passes to clean each face of the joint (one pass for each face). Hold the nozzle 1 to 2 inches from the joint face at an angle to the joint face.

Remove any contaminants such as oil, curing compound, etc. by sandblasting to the satisfaction of the Engineer. Solvents, wire brushing, or grinding are not permitted.

Air blast the joint just prior to installing the Membrane Sealant. Equip the air compressor used to clean the joint with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. Spot check the joint to verify any residual dust or dirt has been removed. The Engineer is required to inspect the joint immediately prior to installing the joint material.

⚹ See KDOT Standard Specifications for Membrane Sealant, Bonding Adhesive and Splice Adhesive. The width of the membrane sealant is 4 inches (nominal).

Do not allow traffic on the joint for a minimum of 3 hours unless otherwise directed by the Engineer.

Use splice materials and methods recommended by the Manufacturer.

All work and materials for the preparation, construction, and installation of the joint will be subsidiary to the concrete approach pavement.

BRIDGE APPROACH SLAB FOOTING

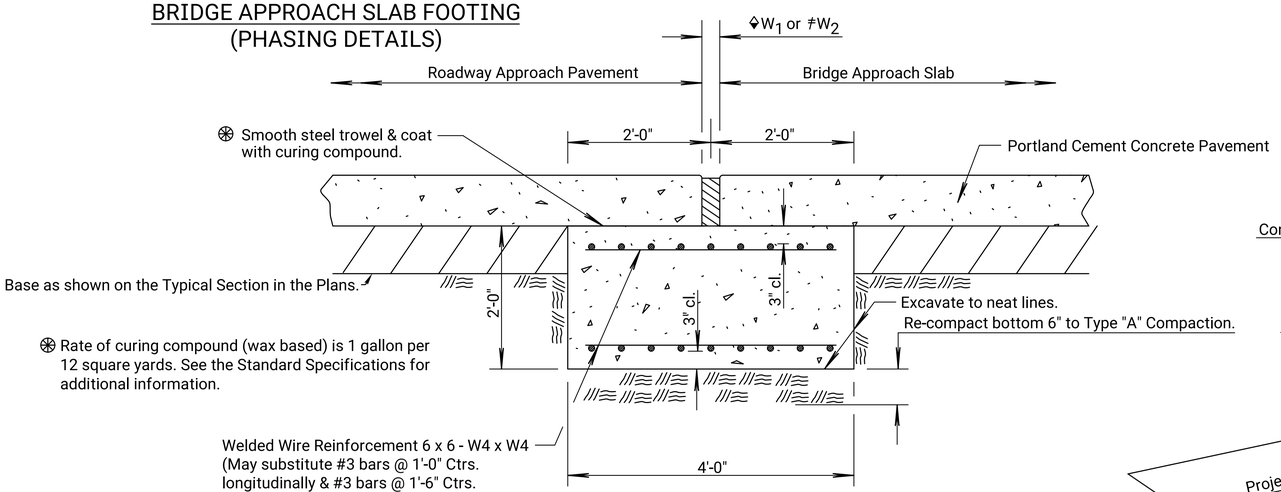
Pay for the Bridge Approach Slab Footing at the unit price bid per cubic yard for "Bridge Approach Slab Footing". This price will be full compensation for furnishing all materials and labor including Concrete Grade 4.0 (AE) Pavement, Reinforcing Steel (Gr. 60) (Epoxy Coated), excavation, Type "A" Compaction and materials used to prevent bonding of concrete. The Contractor may use Concrete Grade 4.0 (AE) or the mix used in the concrete pavement for the slab footing.

⧫ PRESSURE RELIEF JOINT WIDTH DETAILS (W_1)							
℉ Temperature (F°)	40°	50°	60°	70°	80°	90°	100°
Formed Concrete Opening Size	4.0"	3¾"	3½"	3¼"	3.0"	2¾"	2½"

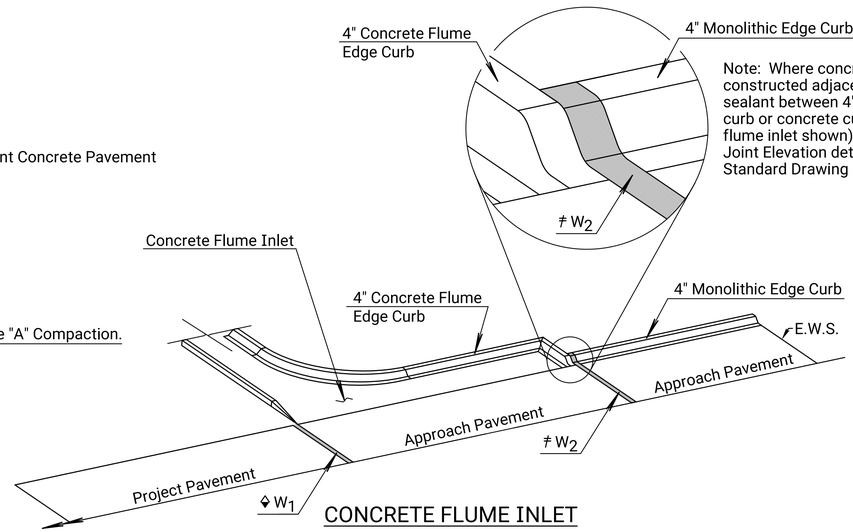
℉ Average Ambient Temperature over previous 24 hours.

≠ EXPANSION JOINT WIDTH DETAILS (W_2)
See bridge construction layout sheet for details.

BRIDGE APPROACH SLAB FOOTING
(PHASING DETAILS)



BRIDGE APPROACH SLAB FOOTING



CONCRETE FLUME INLET

(Membrane Sealant Placed Through Edge Curb Detail)

Note: Where concrete flume inlets or concrete curb and gutter are constructed adjacent to bridge approach slab pavement place membrane sealant between 4" monolithic edge curb and 4" concrete flume inlet edge curb or concrete curb and gutter as shown on this sheet (concrete flume inlet shown). See approach slab Standard Drawings, Expansion Joint Elevation detail this sheet, Standard Drawing RD628, and Standard Drawing RD635 for additional details.

LEGEND

Membrane Sealant

NO.	DATE	REVISIONS	BY	APP'D
10	1-22-16	Add. Det., Keyed Joint & Flume Inlet	T.T.R.	S.W.K.
9	10-16-13	Revised General Note	S.W.K.	J.O.B.
8	4-4-13	Rev. Joint Width Det. Table	S.W.K.	J.O.B.
7	7-10-09	Adjusted Expansion joint table	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE APPROACH SLAB DETAILS
EXPANSION/PRESSURE RELIEF JOINT/
BRIDGE APPROACH SLAB FOOTING

RD712

FHWA APPROVAL	2-1-16	APP'D.	Scott W. King	
DESIGNED	DETAILED	QUANTITIES		TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.		TRACE CK.

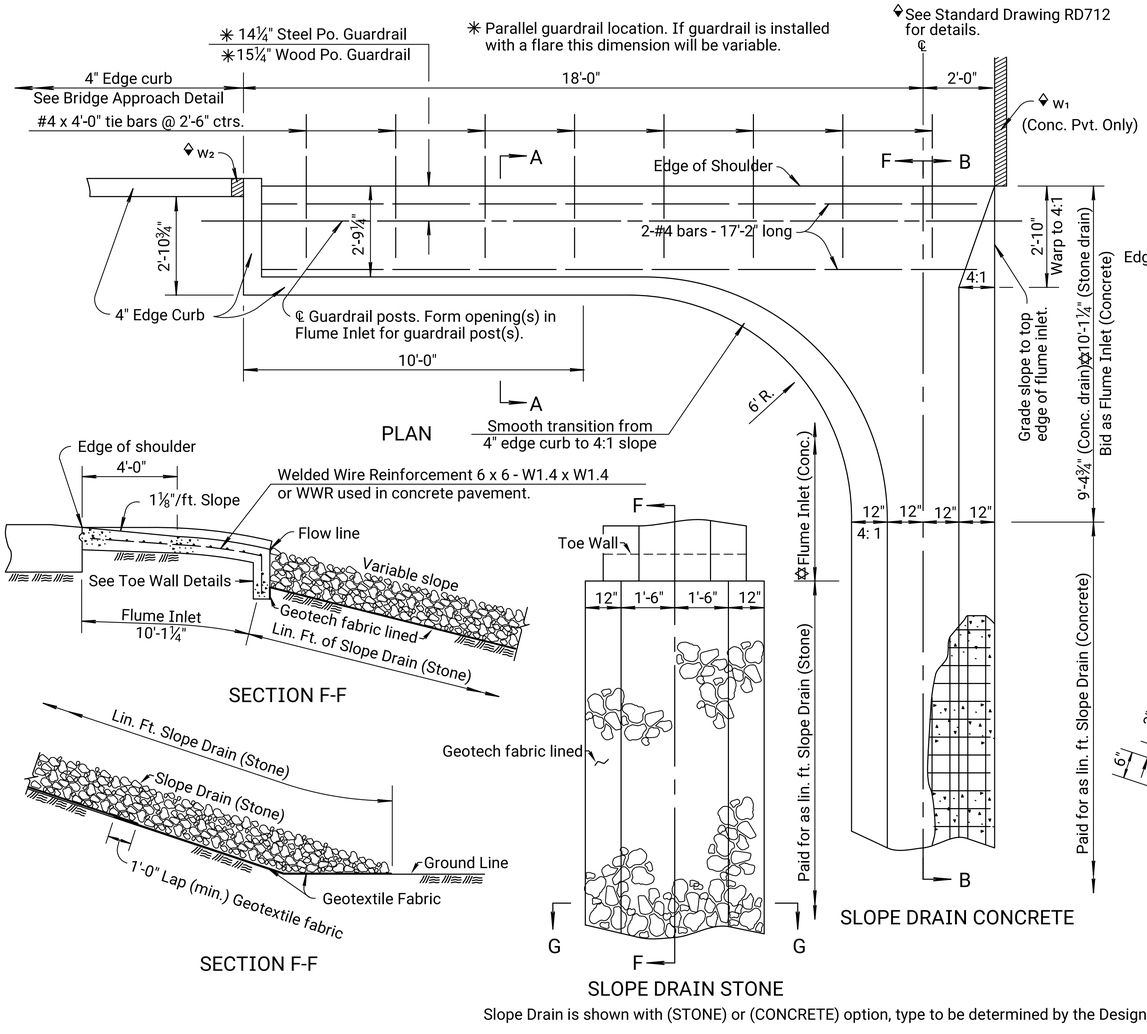
KDOT Graphics Certified 11-10-2021 Sh. No. 12

KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:37
File : KA608301rss712-10.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	13	85

Note to Designer: When concrete flume inlets are used on projects with asphalt pavment use a 33'-0" bridge approach.



Slope Drain is shown with (STONE) or (CONCRETE) option, type to be determined by the Designer.

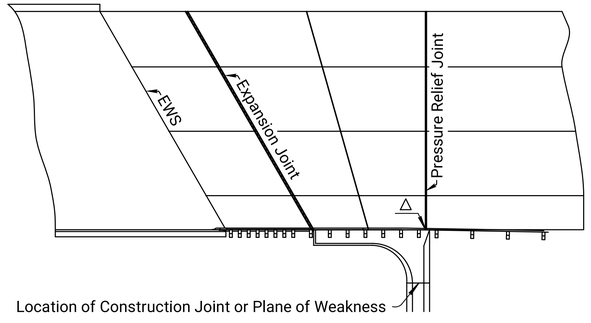
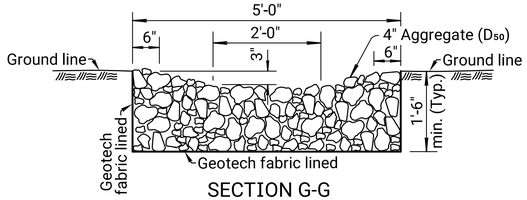
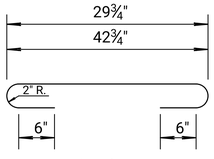


DIAGRAM of FLUME INLET at PRESSURE RELIEF JOINT

△ On projects with concrete paved shoulders where, due to skew of the bridge, the flume inlet extends beyond the 4" pressure relief joint of the special concrete bridge approach, the portion of inlet or gutter extending beyond the pressure relief joint shall not be tied to the concrete shoulder with tie bars.

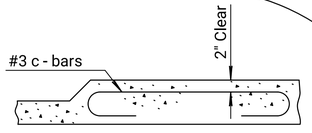


SECTION G-G

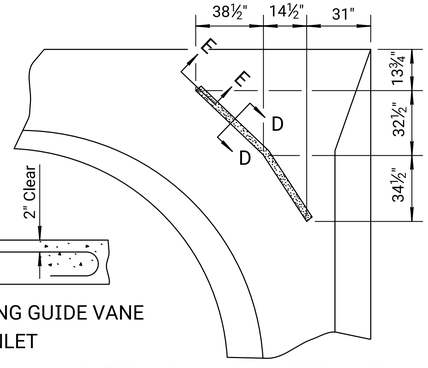


#3 c - bars

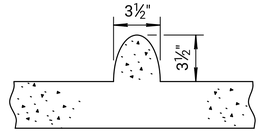
Bending Diagram
(Bend one bar each length)



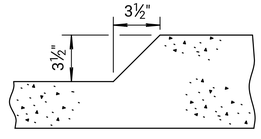
METHOD of CONNECTING GUIDE VANE to FLUME INLET



PARTIAL PLAN with GUIDE VANE



SECTION D-D
(Guide Vane formed monolithic)



SECTION E-E
(Typical both ends of vane)

GENERAL NOTE

Flume Inlets shall be paid for by unit price per each. Slope Drains (Stone or Concrete) shall be paid for by unit price per linear foot. Reinforcing steel & welded wire reinforcement are subsidiary to Flume Inlet and Slope Drain.

Flume Inlets will be constructed without Guide Vanes except at locations noted in plans or as directed by the Engineer. Construction of guide vanes, when required, shall be subsidiary to the bid item "Flume Inlet ".

The entire area of the Flume Inlet & Slope Drain shall be placed monolithic and struck off with a uniform thickness of 6 inches.

Guide Vanes may be formed monolithic with the Flume Inlet or tied to the Flume Inlet in the manner shown if constructed separately. Alternate methods of constructing Guide Vanes may be used with approval of the Engineer.

Concrete Grade 3.0 (AE) shall be used in Flume Inlet and Slope Drain.

On concrete pavement projects, the contractor may substitute the mix used in concrete pavement.

Transverse expansion and contraction joints of same type in pavement are to extend through the flume inlet and 4" edge curb, omitting load transfer devices. The edge curb section will be made continuous through any expansion joint by using a filler material approved by the Engineer to fill the void to the full height of the curb.

Joints will not extend into the Slope Drain.

All exposed edges shall be finished with an edging tool.

For details of 4" edge curb see Standard Drawing RD711.

No adjustment of guardrail post spacing will be permitted.

Flume inlet shall only be constructed adjacent to concrete pavement. Flume inlet shall be tied to the pavement with #4 x 4'-0" tie bars at 2'-6" centers. Tie bars shall be subsidiary to the Flume Inlet.

Shape of guide vane shown is approximate and may be altered slightly to simplify construction. Height and width dimension shall be as shown regardless of shape.

Aggregate for the Slope Drain (STONE) shall meet the reqirements of stone for Aggregate Ditch Lining and have a D_{50} of 4" unless otherwise noted on the plans. The Contractor shall place stone from bottom to the top of slope to produce a well graded mass without segregation of material sizes. Placement, measurement, and payment shall conform to KDOT Standard Specifications.

Slope Drain (STONE) shall be underlain with geotextile fabric that meets the KDOT Standard Specification. All work and materials for the geotextile fabric shall be subsidiary to the Slope Drain (STONE).

QUANTITIES (For information only)

SLOPE DRAIN (CONCRETE)

Flume Inlet Concrete:
1.9 cu. yds. Concrete ⊛
42 lbs. reinf. steel and WWR
Slope Drain (CONCRETE):
0.0833 cu. yds. Concrete per lin. ft.
0.79 lbs. WWR per lin. ft.
Toe wall shall be paid for as 1.5 lin. ft. of Slope drain.

SLOPE DRAIN (STONE)

Flume Inlet & Toe Wall Concrete:
2.2 cu. yds. Concrete ⊛
44 lbs. reinf. steel and WWR
Slope Drain (STONE): 4" Aggregate (D50)
0.25 cu. yds. 4" Agg. (D50) per lin. ft.
0.90 sq. yds. Geotextile fabric per lin. ft.

⊛ Does not include guide vanes.

NO.	DATE	REVISIONS	BY	APP'D
6	1-25-16	Added Note to Designer	T.T.R.	S.W.K.
5	9-12-07	Reorg. sheet, add. slope drain stone	S.W.K.	J.O.B.
4	1-28-05	Chg. Class to Grade conc., reinf.	S.W.K.	J.O.B.
3	7-26-04	Revised guard fence to guardrail	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FLUME INLET and SLOPE DRAIN (CONCRETE/STONE)

RD628

FHWA APPROVAL	2-1-16	APP'D. Scott. W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

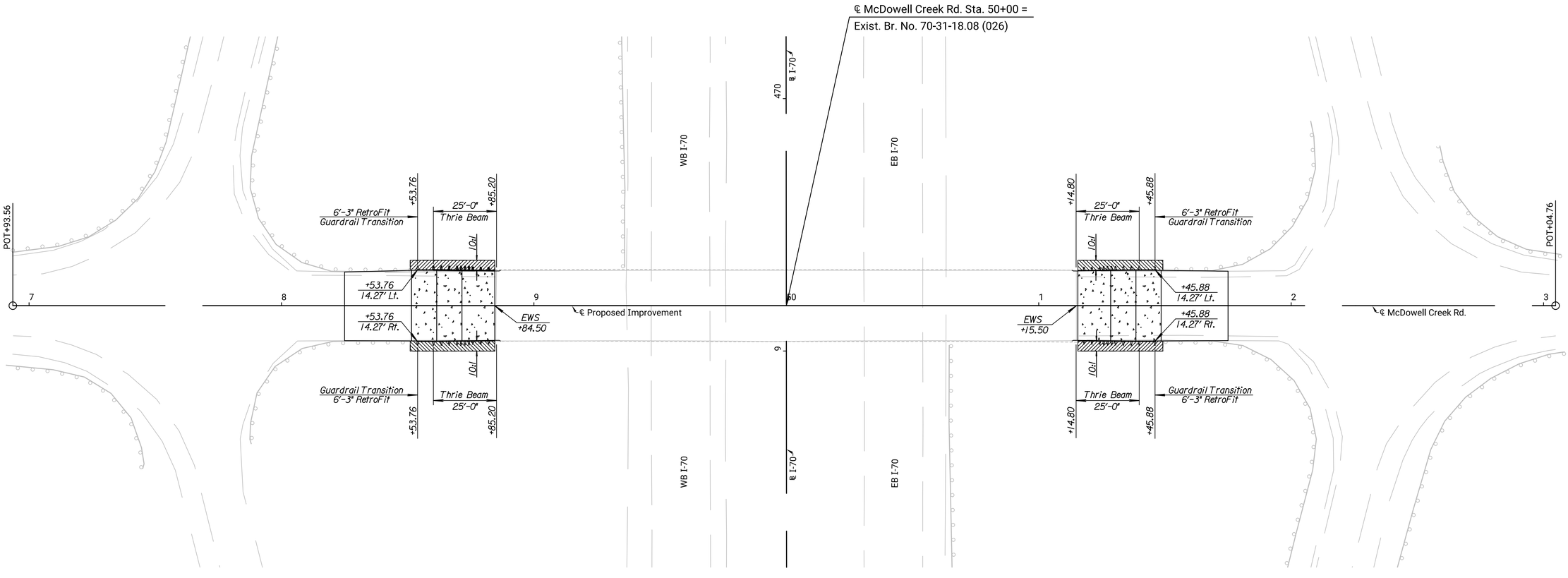
KDOT Graphics Certified 11-10-2021 Sh. No. 13

KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:37
File : KA608301rss628-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	14	85

Scale: 1" = 20'



LEGEND

- 10" Concrete Pavement Uniform (AE) (Br. App.)
- 4" Aggregate Shoulder (AS-1) 10:1 Guardrail Pad

Note: All Stations and offsets are to face of blockout.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL LAYOUT

BR. NO. 70-31-18.08 (026)

KDOT Graphics Certified 03-11-2022 Sh. No. 14

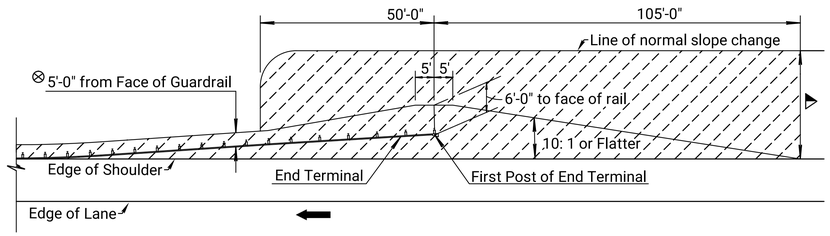
KDOT Graphics Certified

Plotted by : Stacy.Swann 11-MAR-2022 10:52
File : KA608301rgr-01.dgn

Note to Designer - Design guardrail installations using guidance shown on KDOT's 'Guardrail Typical Alignments' Standard Drawings. 'Flared' guardrail installations are preferred over 'Parallel' or 'Zero Flare' installations. Where 'Flared' or 'Parallel' installations are used, the flare rate of the guardrail end terminal typically matches the flare rate of the remaining guardrail installation. For 'Zero Flare' installations, 'Parallel' guardrail end terminals should be designed using typical flare rates of 50:1 or flatter for the length of the end terminal. However, while 50:1 or flatter flare rates are typical for 'Parallel' guardrail end terminals, these end terminals may be flared as steep as 26:1 or flatter in order to offset the end terminal head as far from the edge of the through traveled lane as practicable.

GUARDRAIL CLEAR AREA

Applies to all guardrail installations unless otherwise shown in the plans.



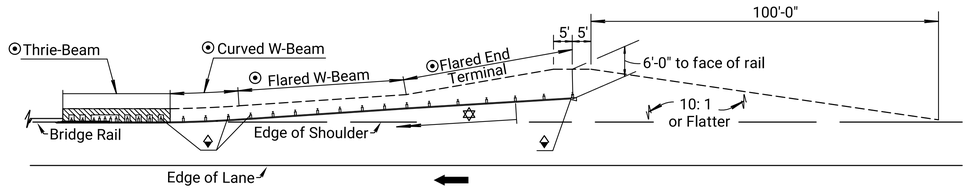
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet behind the Face of the Guardrail through the W-Beam Portion of the Installation as Shown in the 'Guardrail Clear Area' Detail on this Sheet.

Normal Project Side Slope.

Deflection Distance for Normal Post Spacing

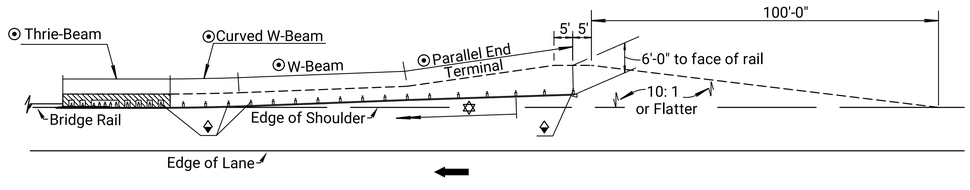
FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



PARALLEL GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



See Guardrail Layout Sheets for Details

On Guardrail Layout Sheets, Show Station AND Offset from the Roadway Alignment to the Face of Post at these Locations.

Length of Need (Begins at Post 3)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	15	85

GENERAL NOTES

Install the guardrail end terminals according to the Manufacturer's Installation Manual. The Contractor will furnish a copy of the Manufacturer's Installation Manual to the Engineer prior to the start of the installation.

Use approved steel (preferred) or wood posts provided by the Manufacturer. The guardrail end terminal post type may be independent of the post type used in the remainder of the installation. However, no mixing of post types is permitted in the remaining w-beam and thrie-beam installation.

Use approved polymer (preferred) or wood blockouts provided by the Manufacturer. The guardrail end terminal blockout size and type may be independent of the blockout size and type used in the remainder of the installation. For blockout size and types for the remaining w-beam and thrie-beam portion of the installation see the details shown on KDOT's 'Guardrail Post Details' and 'Guardrail Thrie-Beam Transition Details' Standard Drawings.

Apply retroreflective sheeting to the end terminal impact head before installation.

Tighten all cable anchor assemblies as per the Manufacturer's Installation Manual.

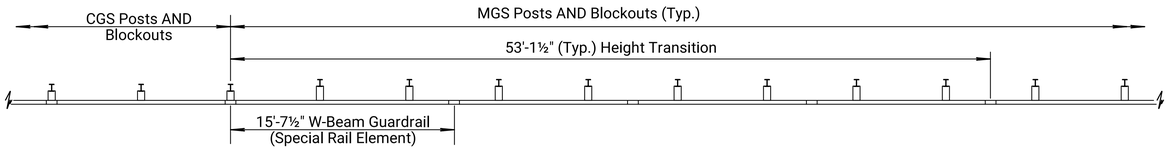
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final configuration.

The minimum length of w-beam guardrail required between the thrie-beam transition and the guardrail end terminal is 12'-6" for all installations; unless otherwise stated in the Manufacturer's Installation Manual.

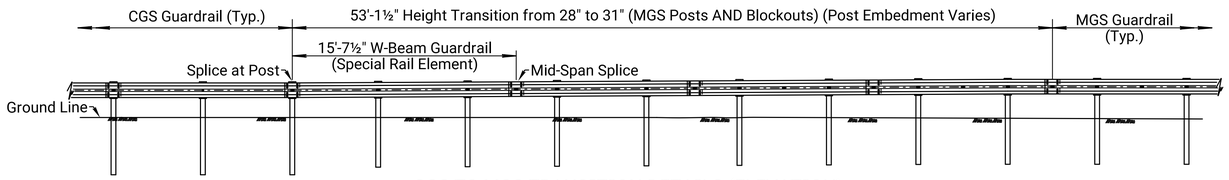
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered during installation, follow the Manufacturer's Installation Manual for guidance. Where the Manufacturer's Installation Manual does not address pavement with a thickness greater than 8" or geologic rock, contact the manufacturer for instructions or install the guardrail posts as directed by the Engineer.

All work and materials required for w-beam and thrie-bean guardrail installations are paid for under the appropriate bid items for either CGS or MGS guardrail depending on the type of installation.

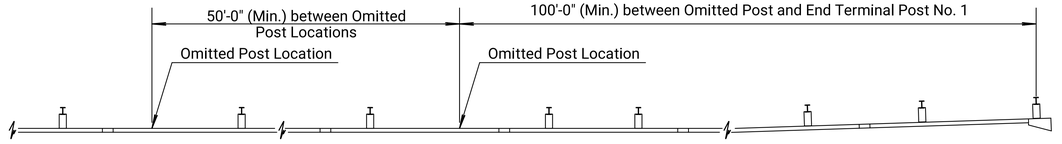
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



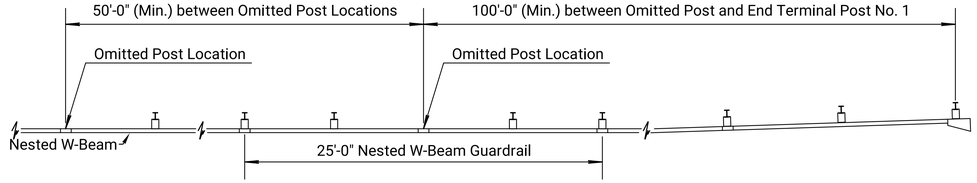
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) END TERMINALS

END TERMINAL BID ITEM	FLARED OR PARALLEL	MOUNTING HEIGHT	CRASH TESTING CRITERIA	STEEL POST DESIGN AVAILABLE	WOOD POST DESIGN AVAILABLE	ENERGY ABSORBING	MANUFACTURER	DESIGN LENGTH	MANUFACTURER SYSTEM LENGTH
Guardrail End Terminal (MGS-FLEAT)	Flared	31"	NCHRP 350	Yes	Yes	Yes	Road Systems	40'-7½"	37'-6"
Guardrail End Terminal (MGS-SRT)	Flared	31"	NCHRP 350	Yes	Yes	No	Trinity Industries	40'-7½"	37'-6"
Guardrail End Terminal (MGS-MSKT)	Parallel	31"	MASH	Yes	No	Yes	Road Systems	46'-10½"	46'-10½"
Guardrail End Terminal (MGS-SOFTSTOP)	Parallel	31"	MASH	Yes	No	Yes	Trinity Industries	46'-10½"	50'-9½"

CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS

END TERMINAL BID ITEM	FLARED OR PARALLEL	MOUNTING HEIGHT	CRASH TESTING CRITERIA	STEEL POST DESIGN AVAILABLE	WOOD POST DESIGN AVAILABLE	ENERGY ABSORBING	MANUFACTURER	DESIGN LENGTH	MANUFACTURER SYSTEM LENGTH
Guardrail End Terminal (FLEAT)	Flared	28"	NCHRP 350	Yes	Yes	Yes	Road Systems	37'-6"	37'-6"
Guardrail End Terminal (SRT)	Flared	28"	NCHRP 350	Yes	Yes	No	Trinity Industries	37'-6"	37'-6"
Guardrail End Terminal (SKT)	Parallel	28"	NCHRP 350	Yes	Yes	Yes	Road Systems	50'-0"	50'-0"

NO.	DATE	REVISIONS	BY	APP'D
2	9-5-18	ADD. OMITTED POST AND TRANS. DETAILS	A.L.R.	T.T.R.
1	6-5-18	INITIAL RELEASE	A.L.R.	T.T.R.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL AUXILIARY DETAILS

RD606

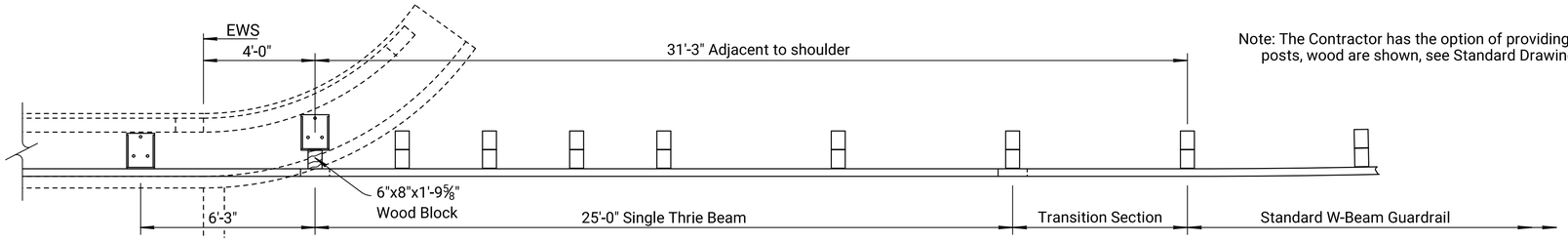
FHWA APPROVAL	9-25-18	APP'D.	SCOTT W. KING
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 11-10-2021 Sh. No. 15

KDOT Graphics Certified

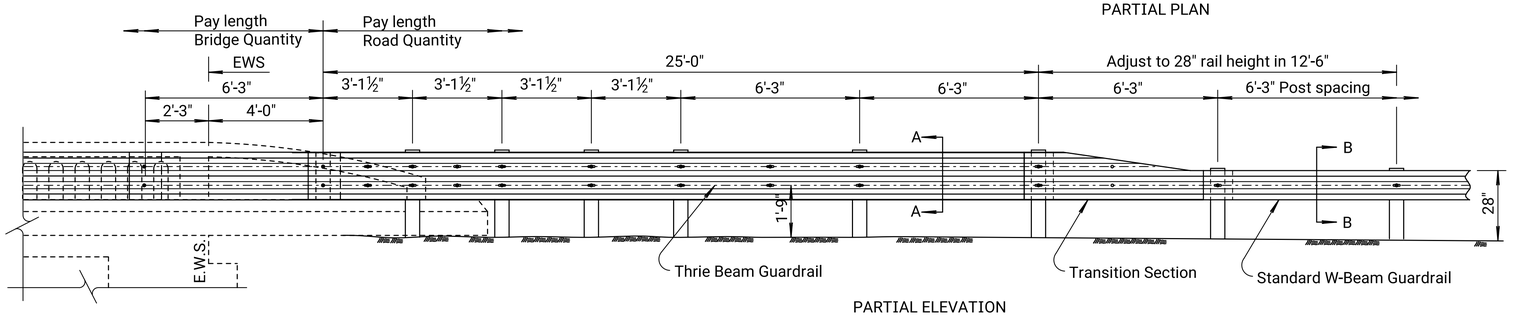
Plotted by : Stacy.Swann 08-FEB-2022 14:38
File : KA608301rss606-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	16	85

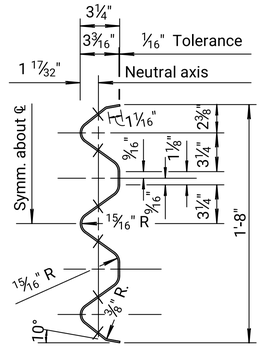


Note: The Contractor has the option of providing wood or steel posts, wood are shown, see Standard Drawing RD611.

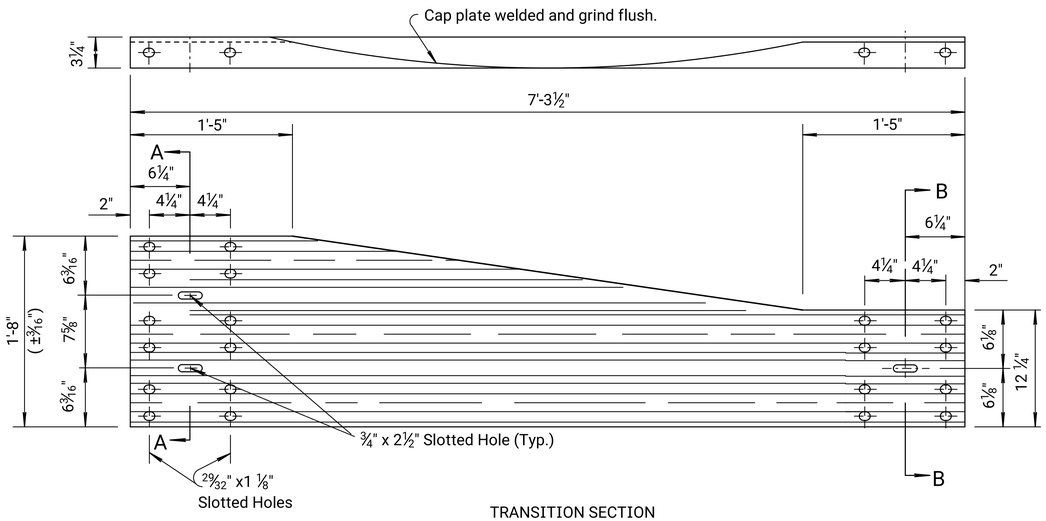
PARTIAL PLAN



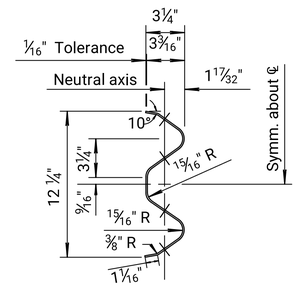
PARTIAL ELEVATION



SECTION A-A THRU RAIL ELEMENT
TYPICAL THRIE BEAM

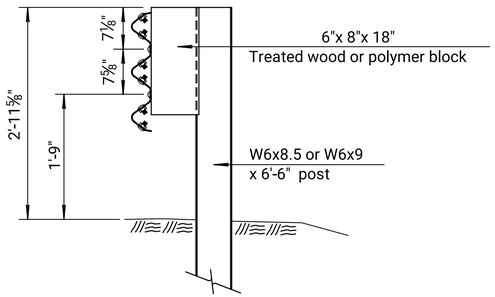


TRANSITION SECTION
(From Thrie Beam to W-Beam rail)

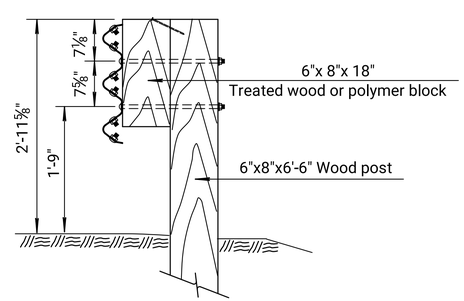


SECTION B-B THRU RAIL ELEMENT
TYPICAL W-BEAM

NOTE: This guardrail application is used only at bridges with curved wingwalls as indicated in the details.



Steel Post Detail
Thrie Beam Section



Wood Post Detail
Thrie Beam Section

GENERAL NOTE

Use galvanized 12 gauge steel rail elements unless otherwise noted. Use galvanized anchor bolts and post rail fittings, see Standard Specifications. Supply guard rail parts that are interchangeable with similar parts regardless of source or manufacturer.

Fabricate Terminal Connector from 10 gauge steel, see standard specification. The connector has the same section as thrie beam guardrail Terminal connector is subsidiary to the bid item "Steel Plate Guardrail".

Shop curve rails when radius is less than 150'.

Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

Bridge to guardrail transition consists of 1- 25'-0" Thrie beam section and one Thrie beam to W-beam transition section and all associated hardware. Use 12'-6" or 25'-0" W-beam guardrail sections at 6'-3" post spacing for the remaining guardrail installation.

All material and work required for this installation are paid under the bid item "Steel Plate Guardrail".

See Standard Drawing RD611 for post, blockout, rail connection and bolt details not shown on this sheet.

See Std. Drawing RD612 for similar alignment and embankment details.

NO.	DATE	REVISIONS	BY	APP'D
5	12-15-10	Revised notes, 28" rail height	S.W.K.	J.O.B.
4	7-22-04	Rev. blockout, gd.fc.to guardrail	S.W.K.	J.O.B.
3	5-18-00	Added note for temporary traffic	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS OF THRIE BEAM RETROFIT GUARDRAIL TRANSITION

RD608

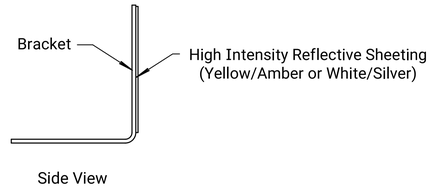
FHWA APPROVAL 1-11-1 1		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Seitz

KDOT Graphics Certified 11-10-2021 Sh. No. 16

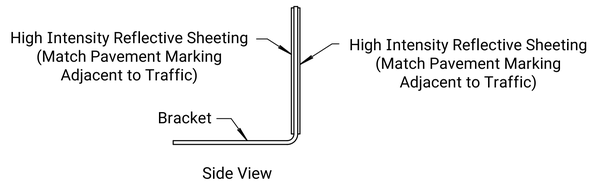
Plotted by : Stacy.Swann 08-FEB-2022 14:38
File : KA608301rss608-01.dgn

KDOT Graphics Certified

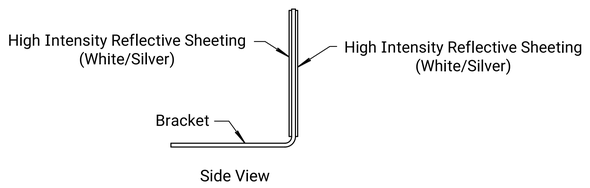
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	17	85



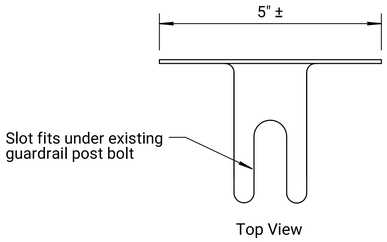
Flexible Marker
One-Way Traffic

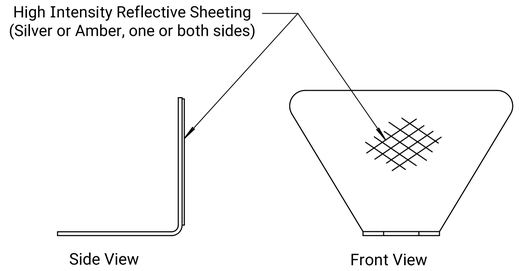


Flexible Marker
Median Locations



Flexible Marker
Two-Way Traffic





Flexible Guardrail Marker

(High Impact Polycarbonate approx. .085" thick, 5¼" x 3")

GENERAL NOTES

Install flexible markers on a post behind the guardrail bolt head on the traffic side of guardrail installations at a spacing not to exceed 25'. No marker is installed between the head and post #5 when the guardrail is terminated with a crashworthy end terminal.

Install flexible markers on the top of bridge rails at a spacing not to exceed 50', except for long bridges (greater than 200' long), where spacing may be increased to 100'.

Install flexible markers on the top of concrete safety barrier at a spacing not to exceed 100', except for barrier along a horizontal curve or along ramps and ramp tapers, where spacing is not to exceed 50'.

Where the height of the bridge rail or concrete barrier is greater than 32", mount the flexible markers on the side of the barrier at a height of 32" as shown on this sheet.

For guardrail, bridge rail, or concrete safety barrier located on two-way roadways, use flexible markers with white/silver high intensity reflective sheeting on both sides.

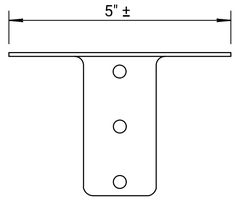
For guardrail located on one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located on the outside edge of one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located in the median, use flexible markers with reflective sheeting installed on both sides of the bracket. Match the color of the marker (yellow/amber or white/silver) to the color of the pavement marking adjacent to the traffic lane.

Use High Impact Polycarbonate Flexible Guardrail Marker with High Intensity Reflective Sheeting or an approved equivalent, see Standard Specifications.

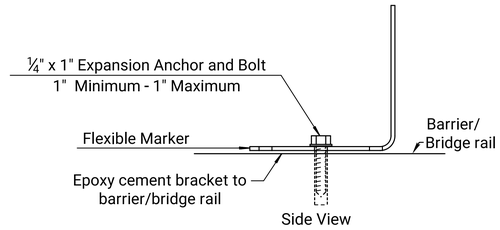
Use zinc or cadmium plated fasteners that comply with Standard Specifications.

Work and materials required for installation of markers on guardrail, bridge rail, or concrete safety barrier are subsidiary to other bid items in the contract.

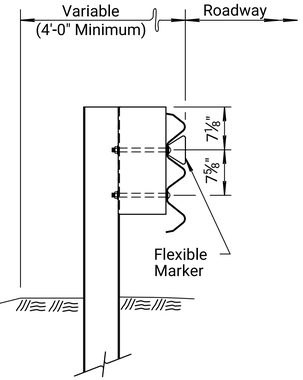
Install flexible markers for the final (permanent) traffic configuration.



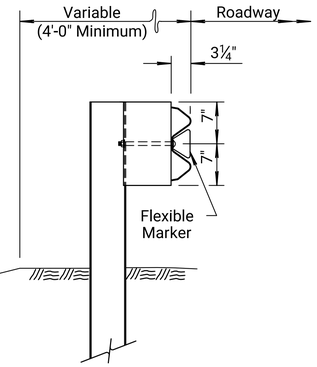
Barrier/Bridge Rail



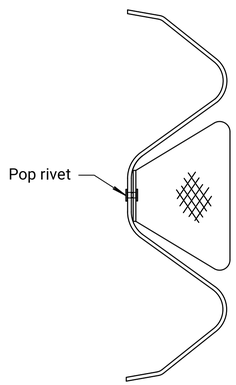
Method of Attaching Flexible
Marker to Barrier/Bridge Rail



THRIE-BEAM GUARDRAIL

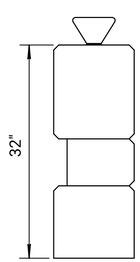


W-BEAM GUARDRAIL

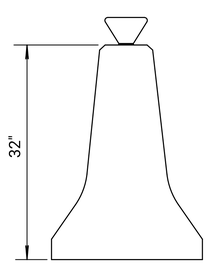


Typical Mounting on W-Beam

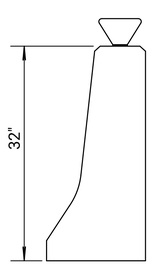
Pop rivet attachment to Guardrail when necessary.



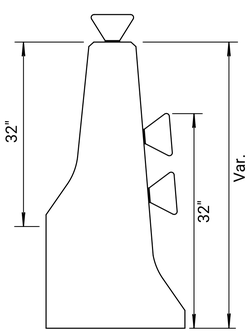
CORRAL RAIL



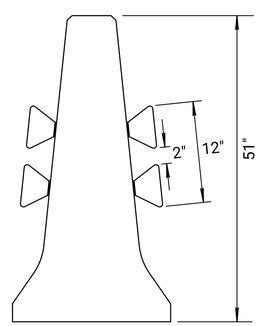
TYPE I CSB



TYPE II CSB or
F-SHAPED BRIDGE RAIL



TYPE III CSB



TYPE IV CSB

TYPICAL BARRIER/BRIDGE RAIL MOUNTING DETAILS

NO.	DATE	REVISIONS	BY	APP'D
9	9-11-17	Rev. Det. Markers, Rev. Gen. Note	A.L.R.	S.W.K.
8	11-15-10	Revised notes	S.W.K.	J.O.B.
7	12-21-08	AKT marker or approved equal	S.W.K.	J.O.B.
6	3-10-09	Add. Flexible rem. Button deline	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MARKER DETAILS FOR GUARDRAIL,
BARRIER, AND BRIDGE RAILS

RD610

FHWA APPROVAL	3-15-18	APP'D. Scott W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 11-10-2021 Sh. No. 17

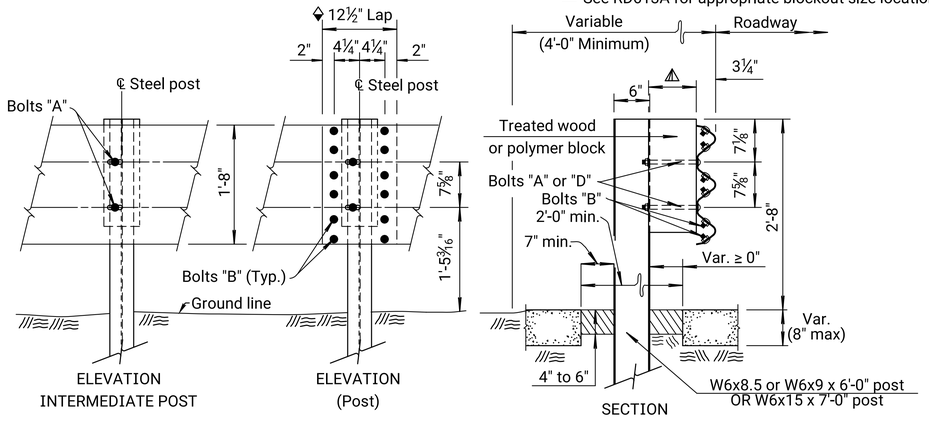
KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:38
File : KA608301rss610-01.dgn

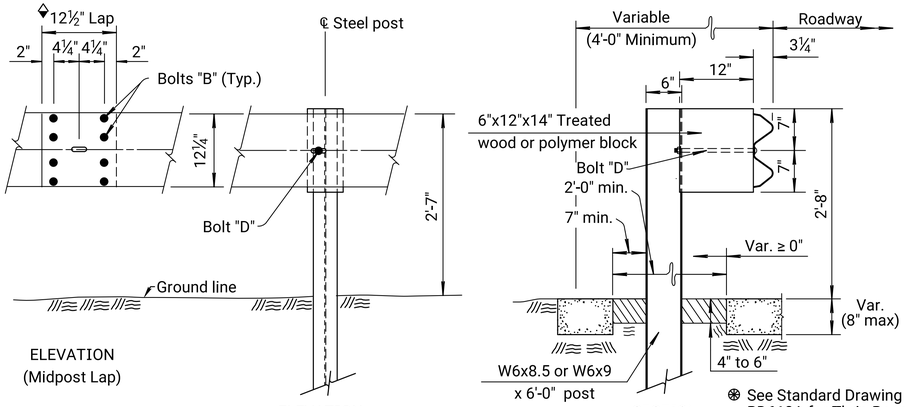
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	18	85

◆ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

⚠ See RD613A for appropriate blockout size location.



THRIE BEAM POST DETAILS/POSTS IN PAVEMENT

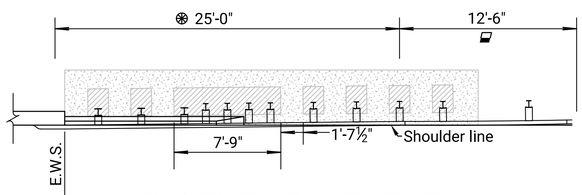


⊛ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.

✡ Non-Metallic (Polymer) or Treated Wood Block

▭ See Guardrail Layout Sheets for Details.

W-BEAM (MGS) POST DETAILS/POSTS IN PAVEMENT



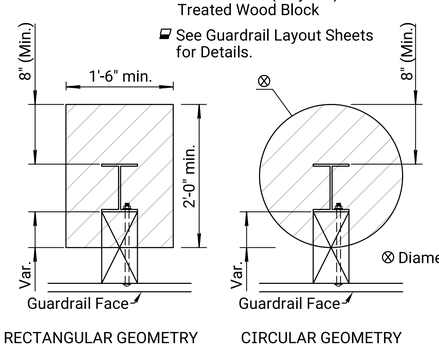
POSTS IN PAVEMENT

(Not to Scale)

☑ Slurry Grout (Low Strength)
See KDOT's Standard Specifications

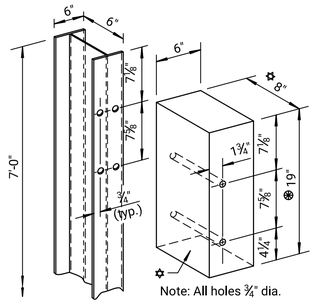
☐ Pavement (Concrete or Asphalt)

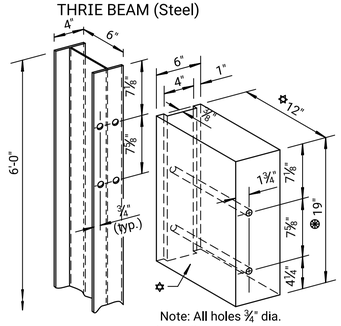
Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's option.

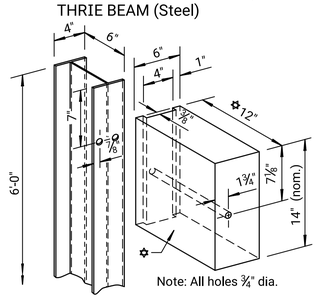


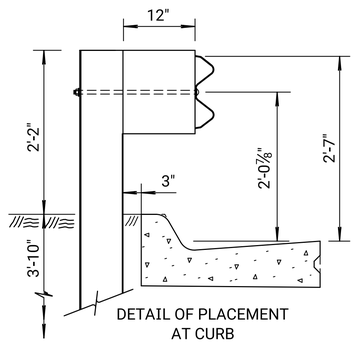
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

PLAN
(ALTERNATE GEOMETRIES)









Note: Measure height of rail from the pavement surface at the curb/pavement joint as shown. A special design is needed when guardrail is not located as detailed. A Type II (laydown) curb & gutter is preferred when guardrail is adjacent to curb.

GENERAL NOTES (Steel Posts)

Use grade of steel for steel posts that meets the requirements of the standard specifications.

Hot dip galvanize the posts after fabrication, see standard specifications.

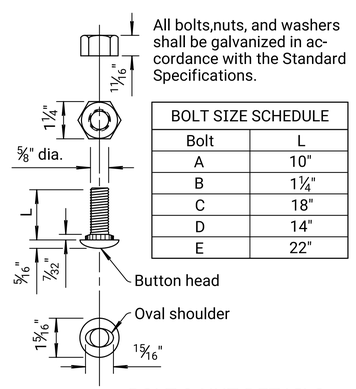
Wood blockouts may be used through the 25'-0" thrie-beam section with wood or polymer blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation. For wood/polymer blockout requirements see standard specifications.

Use S4S rectangular blockouts for Thrie-Beam/W-Beam installation.

Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations.

Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered that prevents installation of a full length post.

All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made.



BOLT SIZE SCHEDULE	
Bolt	L
A	10"
B	1¼"
C	18"
D	14"
E	22"

BOLT & NUT DETAILS

NO.	DATE	REVISIONS	BY	J.O.B.
5	9-24-15	Separated Steel/Wood Post Details	T.T.R.	S.W.K.
4	11-8-12	Revised Detail, Posts in Pavement	S.W.K.	J.O.B.
3	8-1-12	Revised Note to Designer	S.W.K.	J.O.B.
2	5-24-12	Revised Detail, Posts in Pavement	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (STEEL) (MGS) DETAILS

RD611A

FHWA APPROVAL	1-29-16	APP'D. Scott. W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 11-10-2021 Sh. No. 18

KDOT Graphics Certified

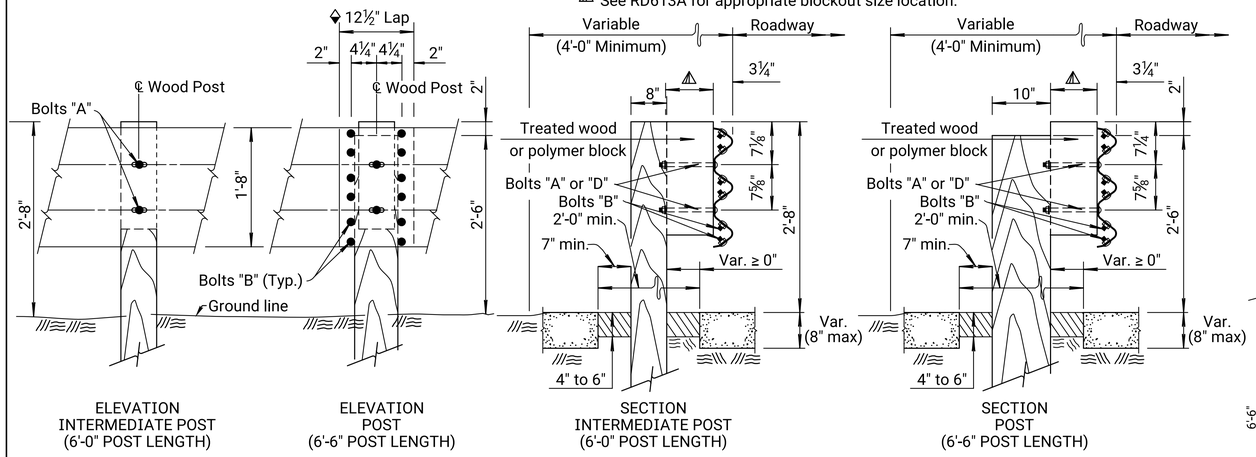
Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

Plotted by : Stacy.Swann 08-FEB-2022 14:38
File : KA608301rss611a-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	19	85

◈ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

⚠ See RD613A for appropriate blockout size location.



ELEVATION
INTERMEDIATE POST
(6'-0" POST LENGTH)

ELEVATION
POST
(6'-6" POST LENGTH)

SECTION
INTERMEDIATE POST
(6'-0" POST LENGTH)

SECTION
POST
(6'-6" POST LENGTH)

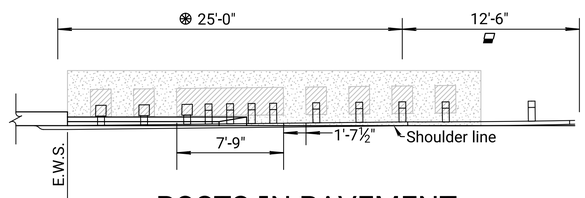
THRIE BEAM POST DETAILS/POSTS IN PAVEMENT

ELEVATION
(Midpost Lap)

ELEVATION
(Post)

SECTION

W-BEAM (MGS) POST DETAILS/POSTS IN PAVEMENT



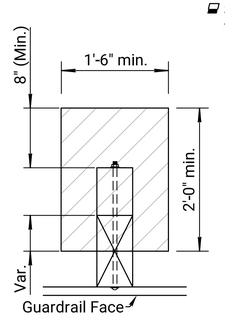
POSTS IN PAVEMENT

(Not to Scale)

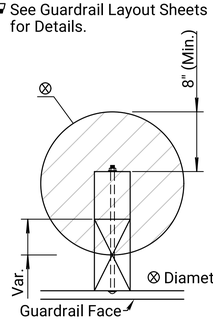
▨ Slurry Grout (Low Strength)
See KDOT's Standard Specifications

☐ Pavement (Concrete or Asphalt)

Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's option.



RECTANGULAR GEOMETRY



CIRCULAR GEOMETRY

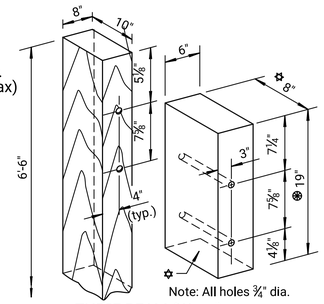
PLAN
(ALTERNATE GEOMETRIES)

⊛ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.

✡ Non-Metallic (Polymer) or Treated Wood Block

See Guardrail Layout Sheets for Details.

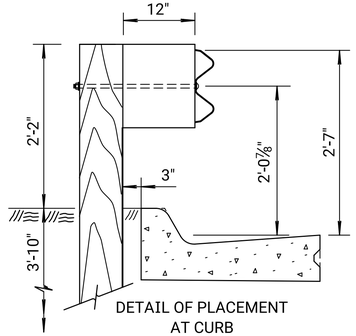
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".



THRIE BEAM (Wood)

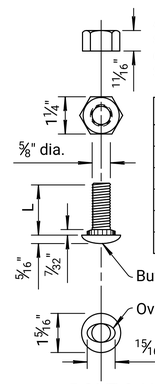
THRIE BEAM (Wood)

"W" BEAM (Wood)



DETAIL OF PLACEMENT
AT CURB

Note: Measure height of rail from the pavement surface at the curb/pavement joint as shown. A special design is needed when guardrail is not located as detailed. A Type II (laydown) curb & gutter is preferred when guardrail is adjacent to curb.



All bolts,nuts, and washers shall be galvanized in accordance with the Standard Specifications.

BOLT SIZE SCHEDULE	
Bolt	L
A	10"
B	1¼"
C	18"
D	14"
E	22"

BOLT & NUT DETAILS

GENERAL NOTES (Wood Posts)

Give all wood posts and wood blocks a preservative treatment, see standard specifications. Thoroughly saturate all cuts, injuries and bolt holes on wood posts and blocks with preservative. Use only one type of preservative treatment on a project.

Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations.

Wood blockouts may be used through the 25'-0" thrie-beam section with wood or polymer blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation. For wood/polymer blockout requirements see standard specifications.

Use S4S rectangular posts/blockouts for Thrie Beam/W-Beam installation. See standard specifications for additional information.

Contractor must notify Engineer at the earliest time when a non-removable man-made object (footing, pipe, etc.) is encountered and prevents installation of a full length post.

All dimensions are nominal and are subject to manufacturing tolerances.

Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made.

NO.	DATE	REVISIONS	BY	APP'D
4	9-24-15	Initial Release	T.T.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (WOOD) (MGS) DETAILS

RD611B

FHWA APPROVAL	1-29-16	APP'D. Scott W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

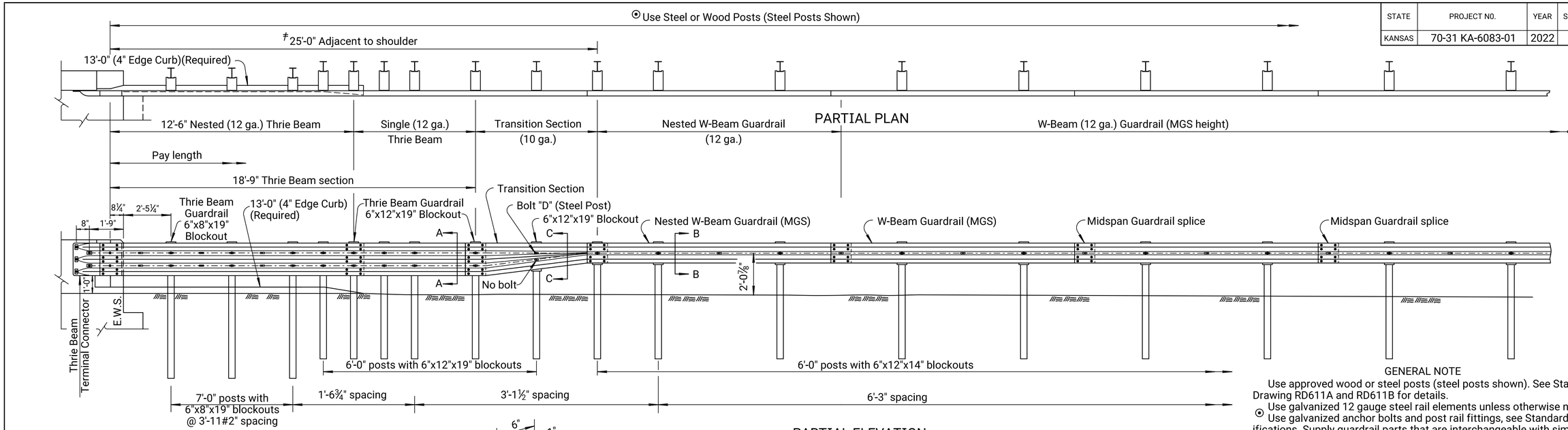
KDOT Graphics Certified 11-10-2021 Sh. No. 19

KDOT Graphics Certified

Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

Plotted by : Stacy.Swann 08-FEB-2022 14:38
File : KA608301rss611b-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	20	85



PARTIAL PLAN

PARTIAL ELEVATION

GENERAL NOTE

Use approved wood or steel posts (steel posts shown). See Standard Drawing RD611A and RD611B for details.

⊙ Use galvanized 12 gauge steel rail elements unless otherwise noted.

Use galvanized anchor bolts and post rail fittings, see Standard Specifications. Supply guardrail parts that are interchangeable with similar parts regardless of source or manufacturer.

Wood blockouts may be used through the 25'-0" thrie-beam section with wood or composite blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation.

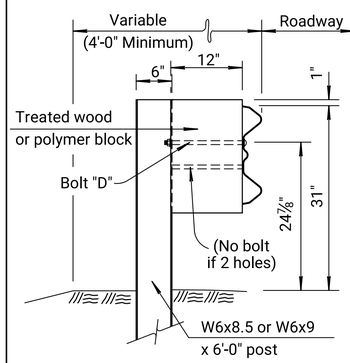
Fabricate Terminal Connector from 10 gauge steel, see Standard Specification. The connector has the same section as thrie beam guardrail. Terminal connector is Subsidiary to the bid item "Guardrail, Steel Plate (MGS)".

Shop bend curve rails when radius is less than 150'.

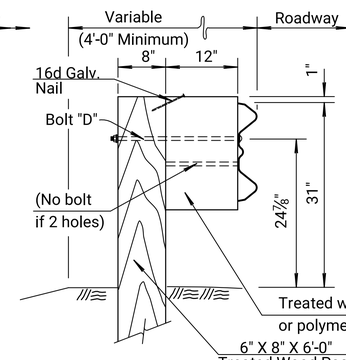
Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

Bridge to guardrail transition consists of 1- 18'-9" thrie-beam with 1- 12'-6" thrie-beam section nested in back of 18'-9" section (See Layout), 1- Thrie beam to W-beam Asymmetrical transition section, use associated hardware with post sizes and location shown. For the remainder of installation use (MGS) W-beam guardrail with only one post type used within (MGS) guardrail run.

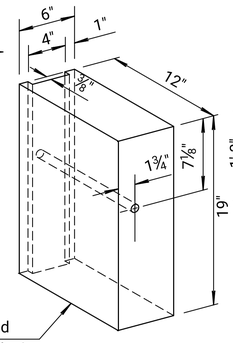
All material and work required for this construction is Subsidiary to the bid item "Guardrail, Steel Plate (MGS)".



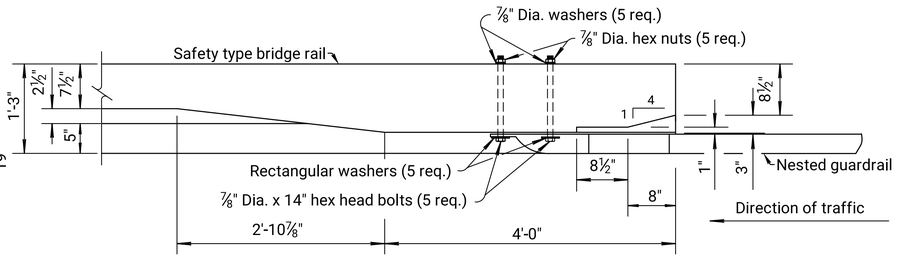
⊙ SECTION C-C (STEEL POST)



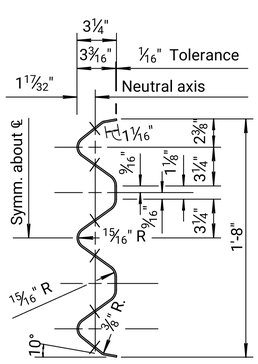
⊙ SECTION C-C (WOOD POST)



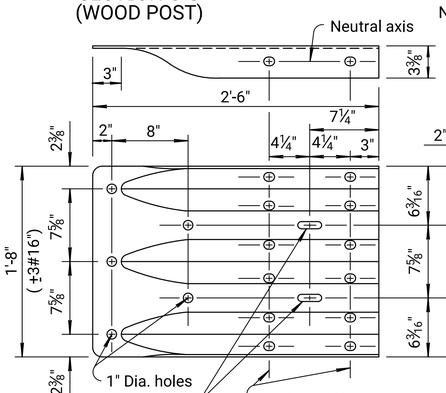
SECTION C-C (BLOCKOUTS)
Note: All holes ¾" dia.



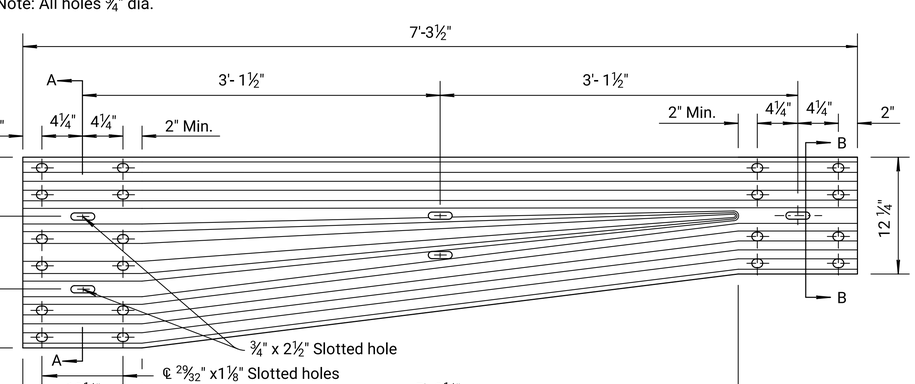
PLAN VIEW
GUARDRAIL ATTACHMENT
TO SAFETY SHAPE BRIDGE RAIL



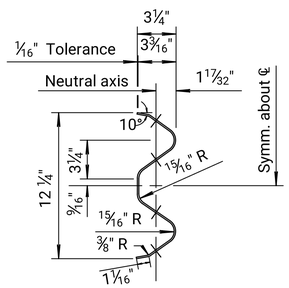
SECTION A-A
THRU RAIL ELEMENT
TYPICAL THRIE BEAM



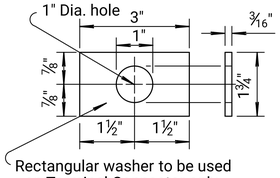
TERMINAL CONNECTOR
⊛ Optional 29/32" x 1¾" Slotted holes Rotated 50° (Typical) (12 req'd.)



ELEVATION
ASYMMETRICAL TRANSITION SECTION
(From Thrie Beam to W-Beam rail)



SECTION B-B
THRU RAIL ELEMENT
TYPICAL W-BEAM



RECTANGULAR WASHER
(Other approved washer may be used.)

NO.	DATE	REVISIONS	BY	APP'D
2	2-10-16	Added Detail, Wood Post	T.T.R.	S.W.K.
1	1-25-12	Revised Details, Thrie-Beam	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS OF THRIE BEAM to (MGS) GUARDRAIL TRANSITION

RD613A

FHWA APPROVAL	4-21-16	APP'D.	SCOTT W. KING
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 11-10-2021 Sh. No. 20

KDOT Graphics Certified

Plotted by : Stacy.Swann 08-FEB-2022 14:38
File : KA608301rss613a-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	21	85

SUMMARY OF QUANTITIES - Br. No. 70-3118.08 (026)

Item / Location	Excavation Class III Cu. Yds.	Concrete Grade 4.0 (AE)(SA) Cu. Yds.	Concrete Grade 4.0 (AE) Cu. Yds.	Bridge Deck Grooving Sq. Yds.	Reinforcing Steel (Epoxy Coated) (Gr. 60) Lbs.	Structural Steel (A709) (Gr. 36) Lbs.	Welded Stud Shear Connectors Each	Bridge Painting † Lump Sum	Environmental Protection Lump Sum	Bridge Backwall Prot. Syst. Sq. Yds.	Abutment Aggregate Drain Cu. Yds.	Falsework Inspection Lump Sum	Slope Protection (Aggregate) Cu. Yds.
Abutment No. 1	91	**	19.6		**					32	25		69
Pier No. 1													
Pier No. 2													
Pier No. 3													
Abutment No. 2	91	**	19.6		**					32	25		64
Substr. Total	182		39.2							64	50		133
Superstr. Total		258.6		616	74,010	819	2,008						
Total	182	258.6	39.2	616	74,010	819	2,008	Lump Sum	Lump Sum	64	50	Lump Sum	133

** Quantities are included in the Superstr. Total Quantity

† Organic Zinc w/ Acrylic System

TRAFFIC DATA - (026)	
AADT (2022)	700
AADT (2042)	1,000
DHV	10%
D	60/40
T	8%

INDEX TO BRIDGE DRAWINGS	
Sheet No.	Drawing
21	General Notes and Quantities
22	General Notes
23	Contour Map
24	Construction Layout
25-26	Abutment Details (Removal Limits)
27	Deck and Rail Details (Removal Limits)
28-30	Abutment Details (Proposed Construction)
31-32	Abutment Aggregate Drain
33	Framing Plan
34	Girder Details
35	Camber Diagrams
36	Superstructure Details
37	Slab Details
38	32" Kansas Corral Rail
39	Bill of Reinforcing and Bending Diagram
	Standards
40	Bridge Excavation (LRFD)
41	Supports and Spacers for Reinforcing Steel

CONTRACTOR CONSTRUCTION STAKING: Contractor Construction Staking for clear span bridges requires two independent surveys. See KDOT Specifications.

EXISTING STRUCTURE: Plans of the existing structure are on file and available for inspection by qualified bidders at the State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison, Topeka, KS.

EXISTING DIMENSION VERIFICATION: Dimensions of the existing structure are based on old plans. Verify, by field measurement, the as-built dimensions of the existing structure and submit such verification in writing to the Engineer. The verification will include sketches, drawings, photographs and descriptions as needed to clearly define the as-built dimensions that will be incorporated in the new construction.

DIMENSIONS: All dimensions shown on the design plans are horizontal dimensions unless otherwise noted. Make necessary allowances for roadway grade and cross slope.

QUANTITIES: Items not listed separately in the Summary of Quantities are subsidiary to other items in the proposal.

BROKEN CONCRETE: Waste the broken concrete from the existing bridge on sites provided by the Contractor and approved by the Engineer.

TEMPERATURE: The design temperature for all dimensions is 60 °F.

BRIDGE EXCAVATION: All excavation shall be Class III. See the Bridge Excavation sheet for the limits of pay excavation.

DEMOLITION PLANS: This is a Category C Demolition. Submit detailed Demolition Plans to the State Bridge Office (or Bureau of Local Projects) at least 4 weeks before beginning the demolition process. Portions of the submitted details shall bear the seal of a Licensed Professional Engineer. Identify, on the plans, the Demolition Supervisor meeting the requirements of the KDOT Specifications. The Demolition Supervisor will attend the required pre-demolition meeting before these operations begin, as described in KDOT Specifications. No demolition work will begin without approved Demolition Plans.

CONSTRUCTION JOINTS: The construction joints shown are optional with the Contractor. If used, place the construction joints only at locations shown or at locations approved by the Engineer.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60. Where non-coated bars come in contact with epoxy coated bars, they need not be coated.

STRUCTURAL STEEL: Abutment beam supports shall meet ASTM A709 Gr. 36.

GENERAL NOTES

SURVEY OF EXISTING ALIGNMENT AND PROFILE: The replacement bridge deck shall be to the same alignment and profile as the existing bridge deck except as noted (profile of the new deck to be ¾" higher and cross slope to be 1.60%.) At a minimum, the Contractor shall take shots on the existing deck of the Profile Grade (Crown Grade), and edges of the deck. These shots shall be taken at tenth points in each span. Also, survey any elemants of the approach roadway required to accurately rebuild the deck to the existing plan dimensions except as noted (¾" raise and 1.60% cross slope). The Contractor shall present the existing deck survey to the Engineer prior to beginning removal of the deck. After the existing concrete deck is removed, survey a profile of the top of each girder at tenth points of each span. Use the girder profile and the theoretical dead load deflections to establish the required concrete fillet depths over the girders so that the finished deck is constructed to match the pre-construction top of deck except as noted (¾" raise and 1.60% cross slope). All equipment, materials, and labor necessary to perform this work shall be included in the bid item "Contractor Construction Staking."

REMOVAL OF EXISTING STRUCTURES: The bid item "Removal of Existing Structures" Lump Sum, includes the removal of the concrete deck and abutment concrete as shown on the plans.

Clearly mark the location of the existing girder top flanges on top of the existing deck concrete within the removal limits before sawing or removing any concrete. Concrete sawing shall be limited to a maximum depth of 2 inches directly above any girder and within 3 inches of either edge of a girder top flange. Do not use drop-type pavement breakers. Do not use a hoe ram directly above any girder or within 1'-0" of either edge of a girder top flange. Use a jackhammer no heavier than 15 lb to remove concrete above and within 1'-0" of either side of a girder top flange.

Damage to the existing structural steel caused by procedures not conforming to the above recommendations shall be repaired as directed by the Engineer at the Contractor's expense (no cost to the State). Any costs incurred for testing or Engineering evaluations will be included in the Contractor's expense for repair. The Contractor shall submit a plan for protection of traffic under the bridge for approval by the Engineer.

All materials removed from the existing structure shall become the property of the Contractor and removed from the site.

SAW CUTS: All saw cuts shall be subsidiary to other items in the contract.

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0 (AE)(SA). Substructure concrete is bid as Concrete (Grade 4.0) (AE). If desired, the Contractor may use Concrete (Grade 4.0) in the footings and in the abutments below the construction joint. Bevel all exposed edges of all concrete with a 3/4 " triangular molding, except where noted on the plans. Construction joints are optional, but if used, place only at locations shown, or at locations approved by the Engineer.

TEMPORARY CONSTRUCTION LOADS: Without prior written approval by the KDOT Area Engineer, do not stock pile construction materials, debris, or rubble exceeding 20 tons on the bridge. For bridges with highway traffic on or under the bridge the Contractor will provide plans showing the location, quantity and weight of the proposed materials, debris or equipment weighing more than 20 tons. These plans will bear the Seal of the Contractor's Engineer before approval is granted. The Contractor's Engineer will use AASHTO Specifications for limitations on structural capacities, as the structure is found in the field.

BRIDGE DECK GROOVING: After the bridge deck has cured, transversely groove the deck in accordance with KDOT Specifications. Pay limits are 2' from inside of rail traffic face.

CONCRETE PLACING SEQUENCE: The sequence of placing concrete in the slab and curbs shall be as shown, or the Contractor may submit an alternate placing sequence for review. Submit the alternate placing sequence to the Engineer at the Preconstruction Conference. Include the proposed rate of concrete placement in C.Y./h, the plant capacity, placement direction, construction joint location, a description of the equipment used in placing the concrete, proposed admixtures, and the quantity of concrete in each placing segment. Any additional cost for the Contractor's alternate plan of placing concrete, including admixtures, shall be at the Contractor's expense and shall be considered subsidiary to the bid item, "Concrete (Grade 4.0)(AE)(SA)". Approval of the Contractor's alternate sequence is required prior to placement of concrete in the deck.

Place and hand vibrate all concrete for the abutment above the construction joint to the bottom of deck elevation just prior to the normal paving train operations. Do this work in a manner to avoid cold joints in either the slab or in the abutment.

FALSEWORK PLANS AND SHOP DRAWINGS: Use the U.S. Customary system of units on falsework plans and shop drawing details.

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. See the Bridge Design Manual, Section 16.1 "Review and Approval of Falsework Plans", for a listing of items to be included on the falsework plan. Submit electronic plans conforming to Section 105 of the Standard Specification with details in compliance with KDOT Specifications to the Field Engineer for review.

LFD RATING FACTORS			
Truck	Rating Level	Inventory	Operating
HS-20	(36T)	0.80	1.52
Type HET	(110T)	X	0.80
2002 LFD Rating, 17th Edition AASHTO			

DESIGN DATA

DESIGN SPECIFICATIONS:
AASHTO Specifications, 2002 Edition and latest Interim Specifications. Load Factor Design.

DESIGN LOADING:
HS20-44

Design Dead Load includes an allowance of 15 psf for a future wearing surface.

UNIT STRESSES:

Concrete (Grade 4.0)(AE)	f'c = 4 ksi
Concrete (Grade 4.0)(AE)(SA)	f'c = 4 ksi
Reinforcing Steel (Grade 60)	fy = 60 ksi
Structural Steel (A709 Gr. 36)	fy = 36 ksi

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 70-31-18.08 (026) Sta. 50+00.00

GENERAL NOTES AND QUANTITIES

McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF		SCALE		APP'D					
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM		
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD		

KDOT Graphics Certified 03-07-2022

Sheet No. 21

KDOT Graphics Certified

Plotted By: peter.madrigal | Plot Location: Bridge
File: ks608301\bbr026-01.dgn
Plot Date: 07-MAR-2022 11:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	22	85

GENERAL NOTES, CONTINUED

FALSEWORK INSPECTION: This project has falsework plan requirements which are considered "Category I" by KDOT specifications. The falsework designer of record will conduct an inspection of the as-built falsework. The bid item, "Falsework Inspection" is full compensation for all materials, labor and equipment. See KDOT specifications.

SLOPE PROTECTION (Aggregate): Place Slope Protection (Aggregate) to the limits and thicknesses shown on the plans or as directed by the Engineer.

WELDED STUD SHEAR CONNECTORS: Weld Shear Stud Connectors with automatically timed stud welding equipment connected to a suitable power source. All stud welding shall conform to KDOT Specifications.

CONSTRUCTION LOADS: Limited traffic is permitted on the new sub-deck, one-course deck or any concrete overlay during the curing period, keep any exposed deck wet during the curing period. See KDOT Specifications Section 710 Tables 710-1 & 710-2 for additional information.

PAINTING: The shop and field coats applied to Structural Steel shall conform to an inorganic zinc primer with a waterborne acrylic finish coat. The finish coat will be Kansas Green, this color will match Federal Standard #24097.

All existing structural steel shall be painted, including: girders, diaphragms, stiffeners, and bearings. Do not paint any existing galvanized material.

Blast clean the tops of the top flanges to receive shear studs to meet SSPC-SP6 Specifications (latest revision) before studs are applied. After the studs are applied, blast clean the tops of all of the top flanges, the studs, areas of existing steel identified for painting, and abutment cross frames to meet SSPC-SP6 Specifications and paint with an approved organic zinc primer to a minimum dry film thickness of 3 mils.

When the top coat is complete, stencil (in black paint) the date the bridge was painted and the code representing the type of paint system used on the bridge. Stencil the legend on the right side of the outside of face of the far right girder near each end of the bridge. Use capital letters, 2 to 3 inches in height. The date stencil shall contain the word "PAINTED" and show the month and the year that the painting was completed.

Paint existing structural steel as indicated in the plans in conformance with the KDOT Specifications.

All painting of existing structural steel is included in the bid item "Bridge Painting (Inorganic Zinc/Acrylic)."

Touch-Up: Prepare and paint all bolts, nuts, studs, and other small areas of damaged paint (1 square yard or less) requiring touch-up, with an approved organic zinc primer.

EXISTING BRIDGE PAINTING: Paint all structural steel and bridge bearings in the existing structure in conformance with the KDOT Specifications. The structural steel has a paint history of:

1) Original paint system: White Lead/Tallow Date: 1964
2) Repaint system: Inorganic Zinc/WB/Acrylic Date: 1999
3) TCLP value is 830 mg/L. Report Date: 21 Sept 2021
4) The weight of existing bridge steel is 106,810 pounds.

ENVIRONMENTAL PROTECTION: After concrete deck removal, the Contractor will test the remaining paint on the top flange for lead content. If necessary, use environmental protection procedures as shown in the KDOT Specifications. If required, the Environmental Protection Structure Classification is Class B.

FILLETS: Construct the finished deck to plan grade by varying the depth of the fillet over the girder to provide for girder profile, concrete dead load deflection and, if necessary, vertical curvature. After the existing concrete deck has been removed, profile each girder. Correct any variation between the actual profile and the concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the girders so that the finished floor is constructed to the theoretical grade. The minimum depth of the deck over the girder shall be 8½ inches which includes a ¾" deck raise.

The theoretical amount of concrete required for the fillets is 3.3 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

WELDING: Material, Fabrication and Construction shall conform to KDOT Specifications. On the shop drawings, show a code or symbol in the tail of the weld symbol that refers to an approved, pre-qualified weld procedure.

SUPPORTING OF EXISTING GIRDER ENDS: The Contractor shall discuss method of supporting existing ends with the Engineer prior to removing the existing abutment. The Engineer shall approve the proposed method of support for the existing girder ends before the Contractor begins abutment removal. Support of the existing girder ends and determination of existing girder elevations shall not be paid for seperately, but is subsidiary to "Removal of Existing Structures."

ERECTION ELEVATION CHECKS: After the abutment and pier concrete has cured and before setting any structural steel, present verification to the Engineer that the elevations at the bearings match plan elevation (±1/4"). Present verification to the Engineer that the elevations at all field splice locations match the elevations (±1/2") in the plans before any connection is fully tightened. (For steel girders that are blocked on the ground, fully tighten the bolted connections prior to erection.)

ABUTMENT AGGREGATE DRAIN: See the General Notes on the "Abutment Aggregate Drain" sheets.

BRIDGE BACKWALL PROTECTION SYSTEM: See the General Notes on the "Abutment Aggregate Drain" sheets.

BACKFILL COMPACTION: Compact backfill at the abutments.

WELDING: Material and construction shall conform to KDOT Specifications. Welding requires approved procedures and welders.

Plotted By: peter.madrigal | Plot Location: Bridge
File: k608301bbr026-02.dgn
Plot Date: 07-MAR-2022 12:00

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
GENERAL NOTES
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF		SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

KDOT Graphics Certified 01-26-2022

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	23	85

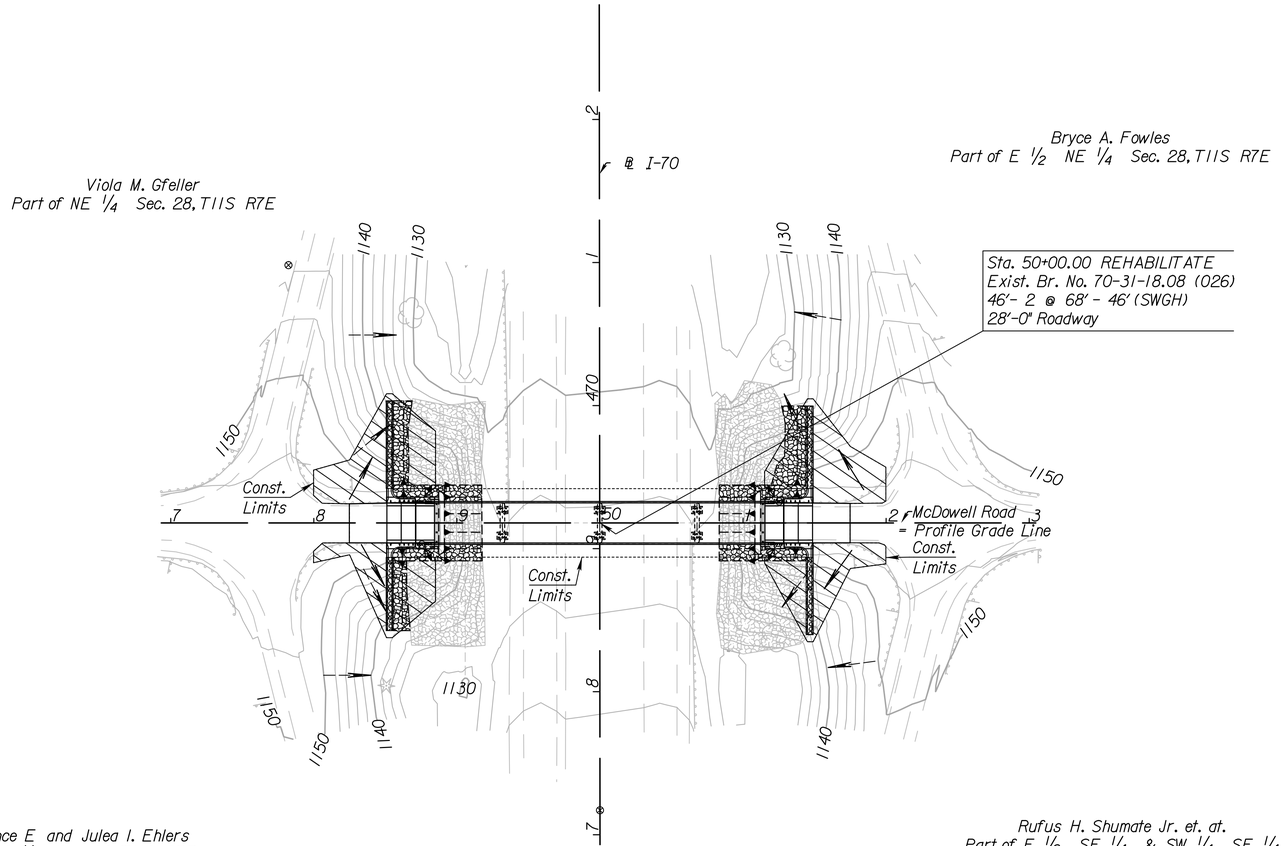
℄ McDowell Creek Rd. P.O.T. Sta. 48+00.18
N. 563,806.785 E. 18,455,362.045
1. Set 1#2" Rebar w/ KDOT Orange Plastic Cap (0.1' Below Concrete Surface)
2. Conc. Nail & KDOT Washer in Top Wood Guardrail Post 25.0' E.S.E.
3. Conc. Nail & KDOT Washer in Top Wood Guardrail Post 25.1' E.
4. ℄ Bridge N. EWS 84.6' S.

℄ McDowell Creek Rd. P.O.T. Sta. 50+00.00 =
℄ I-70 P.O.T. Sta. 469+17.94 = ℄ I-70 Bridge
= P.O.T. Sta. 469+18.01 on KDOT Proj. 70-31 K-5086-01 (1997)
N. 563,607.064 E. 8,455,372.605
1. N.O.R.A.

℄ McDowell Creek Rd. P.O.T. Sta. 51+75.00
N. 1563,432.308 E. 8,455,381.846
1. Set 1#2" Rebar w/ KDOT Orange Plastic Cap (0.1' Below Concrete Surface)
2. Conc. Nail & KDOT Washer in Top Wood Guardrail Post 16.6'W.N.W.
3. E. Face, E. Leg "I-70 East Topeka" Sign at Ground 23.1'W.
4. ℄ Bridge S. EWS 60.1'N,

℄ I-70 P.O.T. Sta. 466+93.11 = P.O.T. Sta. 466+93.11 on
KDOT Proj. 70-31 K-5086-01 (1997)
N. 563,595.168 E. 8,455,148.067
1. Found 1#2" Rebar (1.2' Deep)
2. Rivet & KDOT Washer in Top Median Inlet (BM 10A) 21.5' E.
3. Edge of Shoulder WB I-70 23.7' N.
4. Edge of Shoulder EB I-70 24.1' S.

℄ I-70 P.O.T. Sta. 491+99.72 = P.O.T. Sta. 492+00.00 on
KDOT Proj. 70-31 K-5086-01 (1997)
N. 563,729.779 E. 8,457,651.058
1. Found 1#2" Rebar (1.0' Deep)
2. ℄ Opening Median Inlet 17.0' E.
3. Edge of Shoulder WB I-70 23.9' N.
4. Edge of Shoulder EB I-70 24.0' S.



Scale: 1" = 50'

Plotted By: peter.madrigal | Plot Location: Bridge
File: ka608301bbr026-03.dgn
Plot Date: 07-MAR-2022 12:00

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
CONTOUR MAP
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

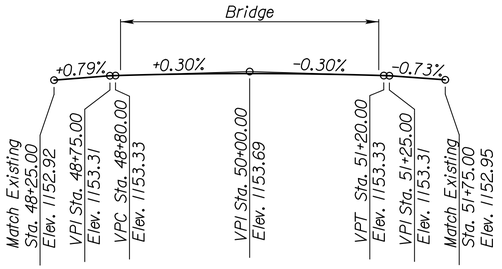
SHEET NO.	OF	SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

KDOT Graphics Certified 01-26-2022

Sheet No. 23

KDOT Graphics Certified

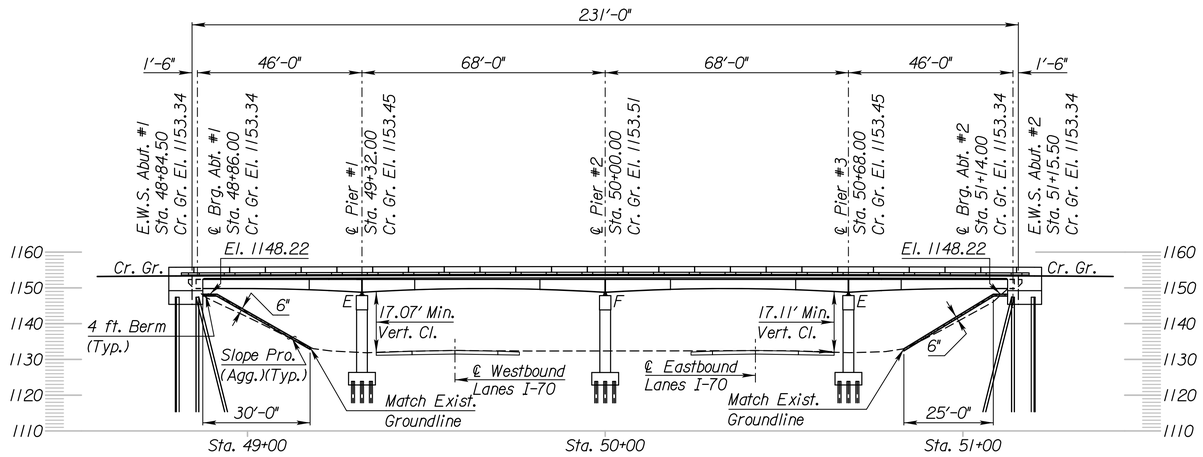
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	24	85



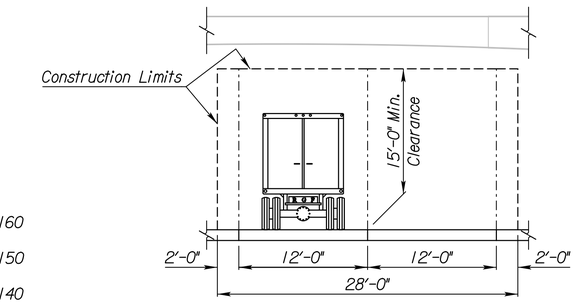
PROPOSED PROFILE GRADE
240' V.C.

EXPANSION JOINT WIDTH DETAILS (W2)						
Ψ Temperature (F°)	40°	50°	60°	70°	80°	90°
Formed Concrete Opening Size	3 1/8"	3 1/8"	3"	2 7/8"	2 7/8"	2 3/4"

Ψ Average Ambient Temperature over previous 24 hours.



ELEVATION



CONSTRUCTION CLEARANCE DIAGRAM

I-70 traffic shall be carried thru construction with minimum clearance as shown on the Construction Clearance Diagram. McDowell Creek Road traffic shall be detoured during construction of the bridge repairs. See Traffic Control Sheets.

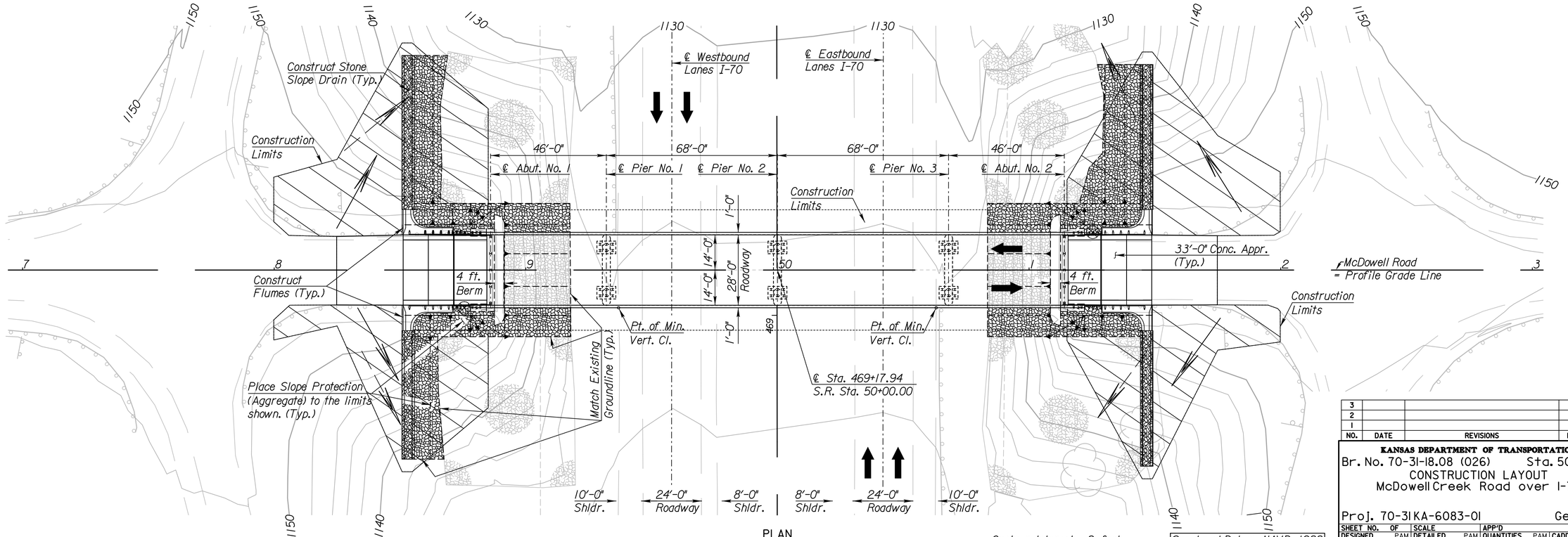
B.M. #10 Found "□" cut N end W handrail of bridge
15.0' Rt. of McDowell Rd. ℄ Sta. 48+75.5 Elev. = 1,155.67'

B.M. #10A - Set Rivet & KDOT Washer in I-70 Median Drain
200.78' Rt. of McDowell Creek Rd. ℄ Sta. 49+99.97 Elev. = 1,134.88'

46'-2 @ 68'-46' Continuous Welded
Plate Girder Spans
Pile Bent Abutments, Column Bent Piers
28'-0" Roadway

B.M. #11 Chiseled "□" cut S end E handrail of bridge
15.0' Lt. of McDowell Rd. ℄ Sta. 51+25.3 Elev. = 1,155.72'

Scale: 1" = 20'



PLAN

Contour Interval = 2 feet

Sea Level Datum NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
CONSTRUCTION LAYOUT
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF	SCALE	APP'D					
DESIGNED PAM	DETAILED PAM	QUANTITIES PAM	CADD PAM
DESIGN CK. BDD	DETAIL CK. BDD	QUAN. CK. BDD	CADD CK. BDD

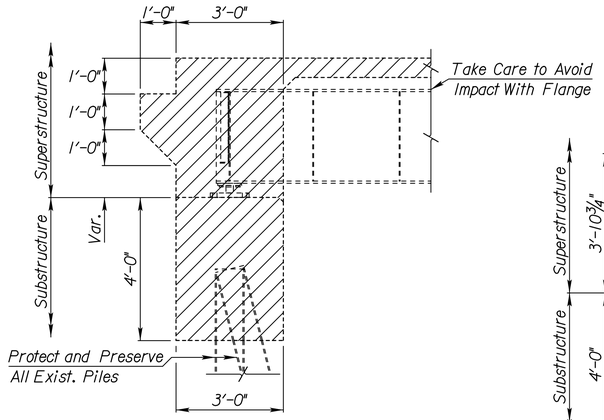
KDOT Graphics Certified 01-26-2022

Sheet No. 24

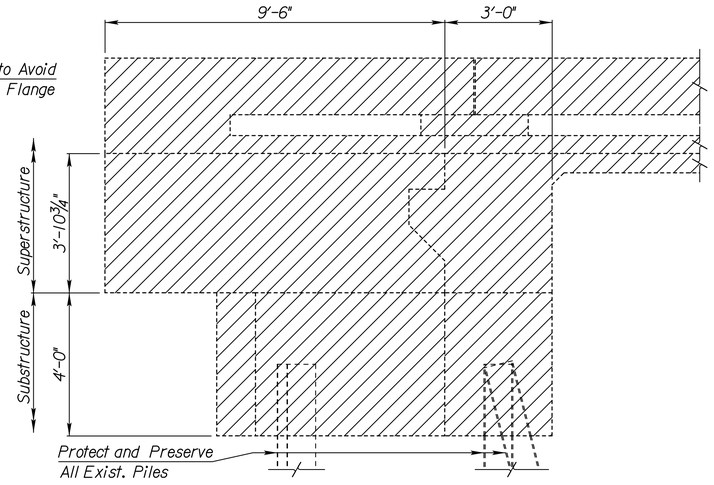
Plotted By: peter.madrigal | Plot Location: Bridge
File: ka608301bbr026-04.dgn
Plot Date: 07-MAR-2022 12:00

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	25	85

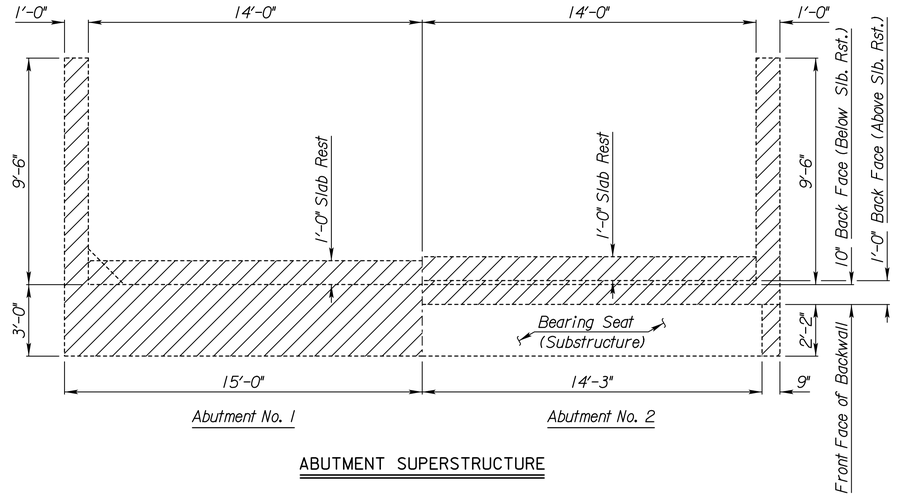


ABUTMENT NO. 1
(Typical Section)



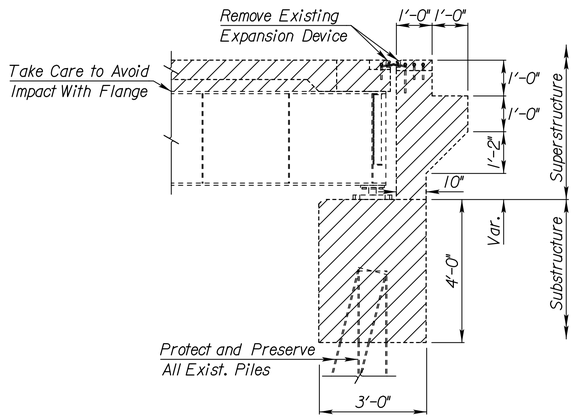
ABUTMENT NO. 1
(Elevation of Wing)

Note: Dimensions and elevations related to the existing structure were determined by the best information available to the Engineer. The Contractor shall verify, by field survey and measurement, the as-built dimensions of the existing structure that will be incorporated in to new construction and submit such verifications in writing to the Engineer for review and approval. See General Notes.

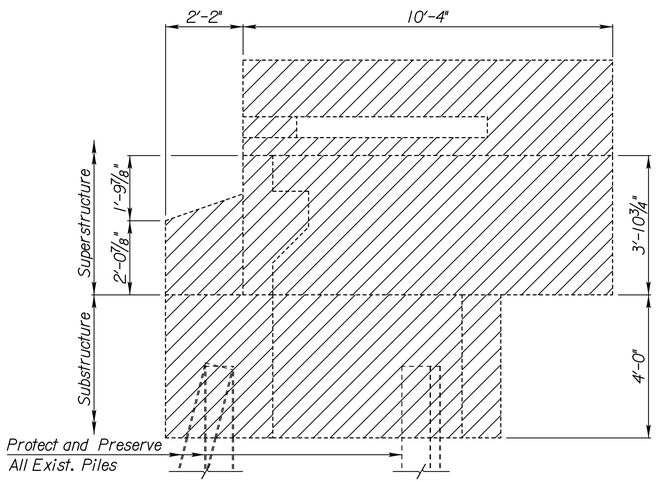


ABUTMENT SUPERSTRUCTURE

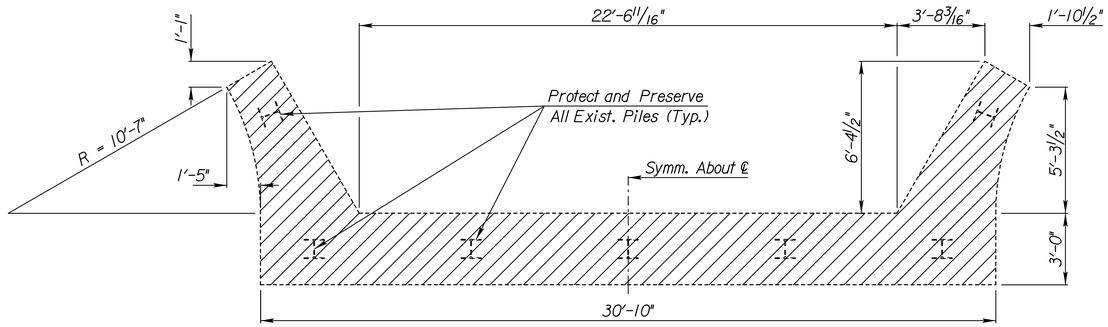
Note: Remove and waste Exist. abutment Bearing Devices.



ABUTMENT NO. 2
(Typical Section)



ABUTMENT NO. 2
Elevation of Wing



ABUTMENT SUBSTRUCTURE
(Both Abutments)

Indicates Limits of Concrete Removal

Summary of Concrete Removed
(For Information Only)
(Measured to front face of substructure.)

Abutment No. 1 Superstructure:	*16.8*	*Cu. Yds.*
Abutment No. 2 Superstructure:	*8.1*	*Cu. Yds.*
Either Abutment Substructure:	*18.9*	*Cu. Yds.*

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
ABUTMENT DETAILS
(REMOVAL LIMITS)
McDowell Creek Road over I-70
Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF		SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

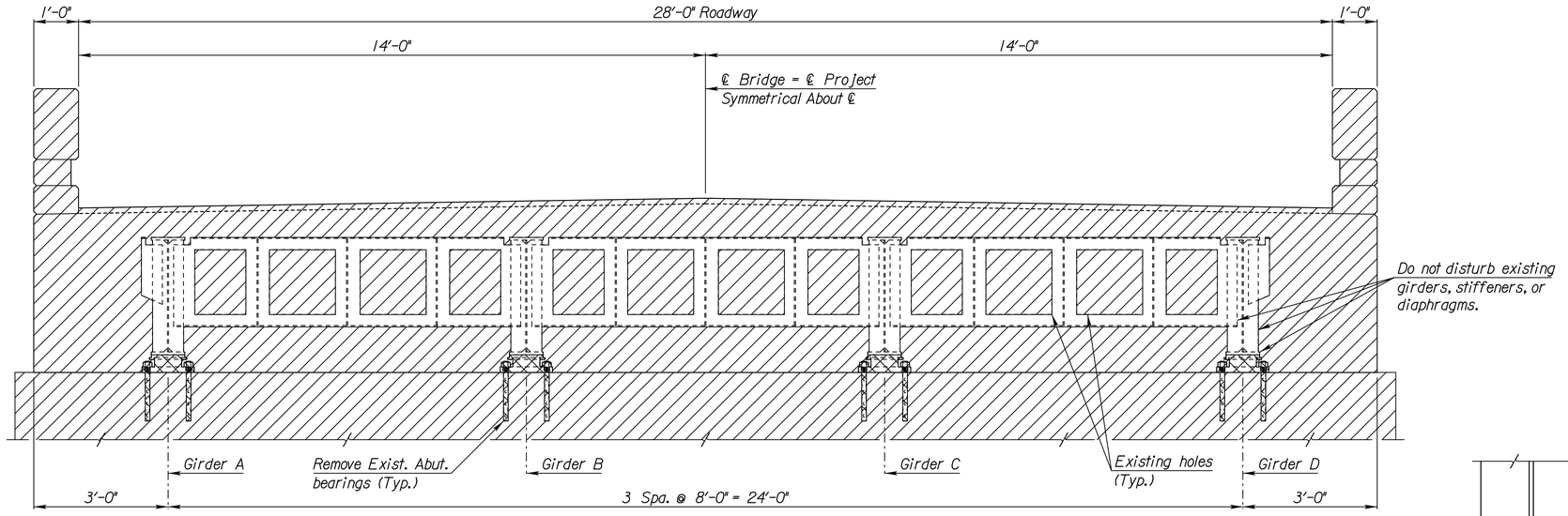
KDOT Graphics Certified 01-26-2022

Sheet No. 25

KDOT Graphics Certified

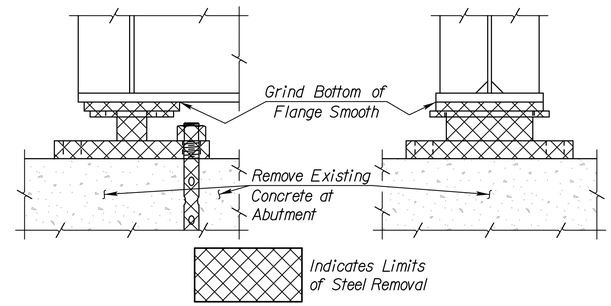
Plotted By: peter.madrigal | Plot Location: Bridge
File: ks60830lbr026-05.dgn
Plot Date: 07-MAR-2022 12:00

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	26	85



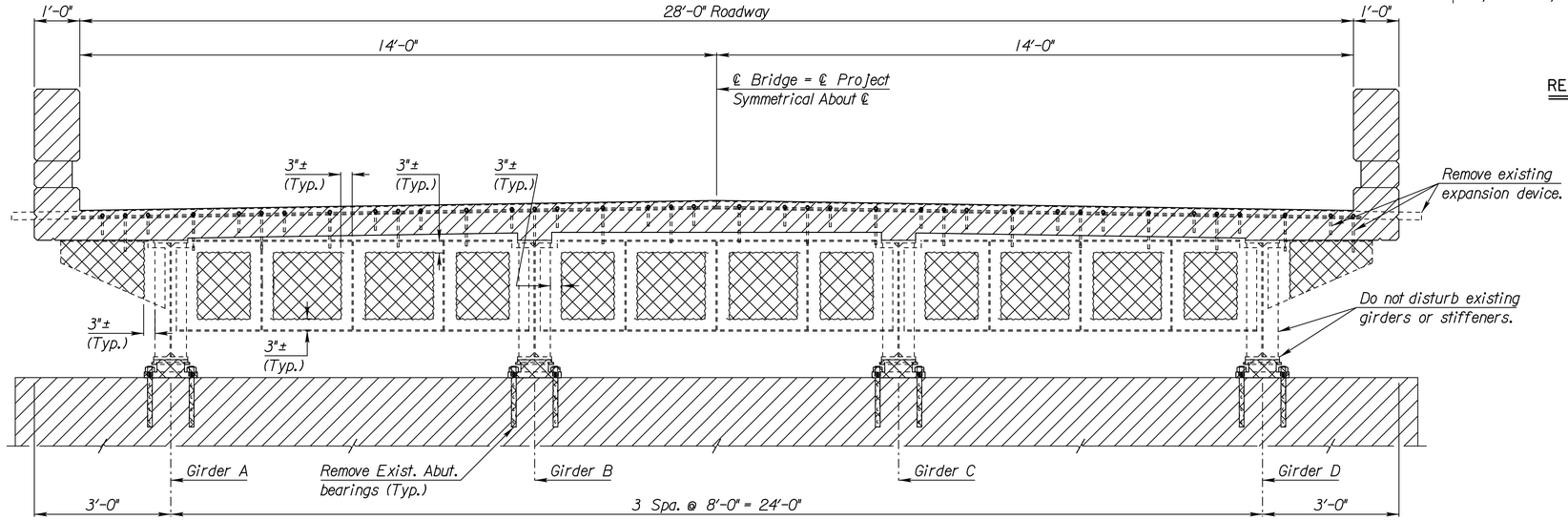
SECTION AT ABUTMENT NO. 1

NOTE: Only air carbon arc cutting will be allowed to remove existing welds. Care shall be taken to not damage existing structure during weld removal.



REMOVAL OF EXISTING ABUTMENT BEARINGS

(4 per Abutment = 8 Total)



SECTION AT ABUTMENT NO. 2

Indicates Limits of Concrete Removal

Indicates Limits of Structural Steel Removal

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 70-31-18.08 (026) Sta. 50+00.00

ABUTMENT DETAILS
(REMOVAL LIMITS)
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO.	OF	SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

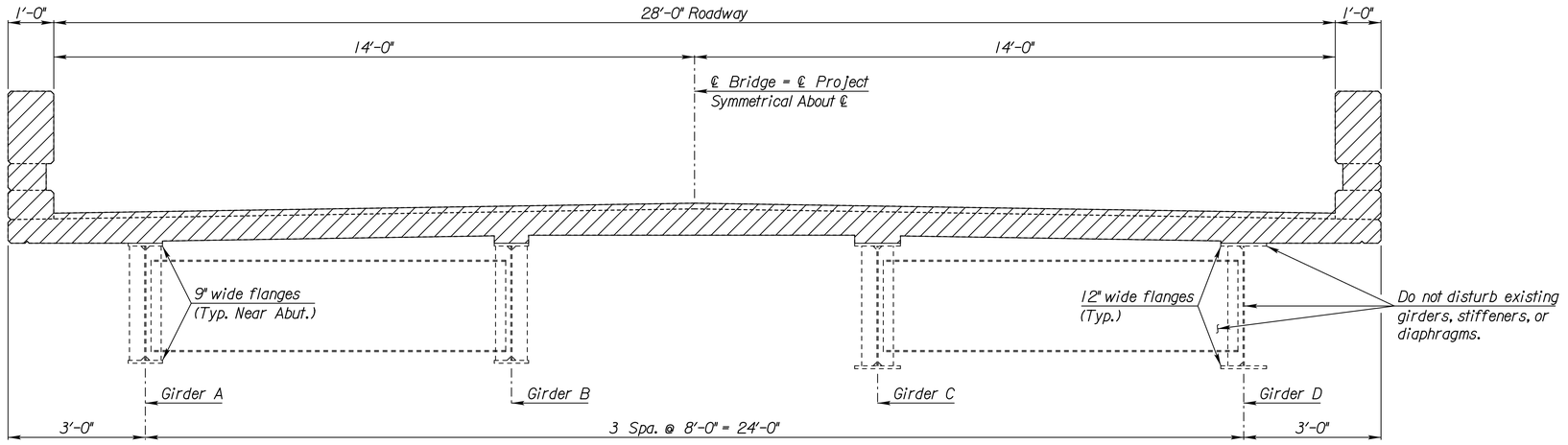
KDOT Graphics Certified 01-26-2022

Sheet No. 26

KDOT Graphics Certified

Plotted By: peter.madrigal
File: ka608301bbr026-06.dgn
Plot Date: 07-MAR-2022 12:00
Plot Location: Bridge

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	27	85

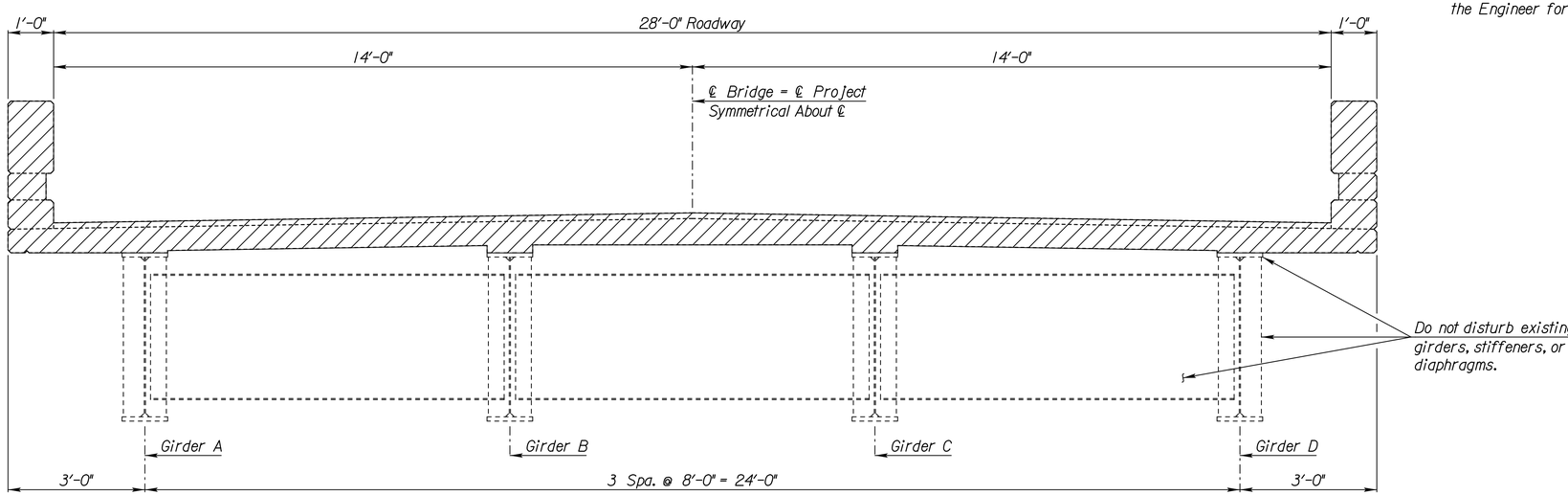


Near Abutments

Typical

TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

Note: Dimensions and elevations related to the existing structure were determined by the best information available to the Engineer. The Contractor shall verify, by field survey and measurement, the as-built dimensions of the existing structure that will be incorporated in to new construction and submit such verifications in writing to the Engineer for review and approval. See General Notes.



TYPICAL SECTION AT PIER

Indicates Limits of Concrete Removal

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 70-31-18.08 (026) Sta. 50+00.00

DECK AND RAIL DETAILS
(REMOVAL LIMITS)
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF		SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

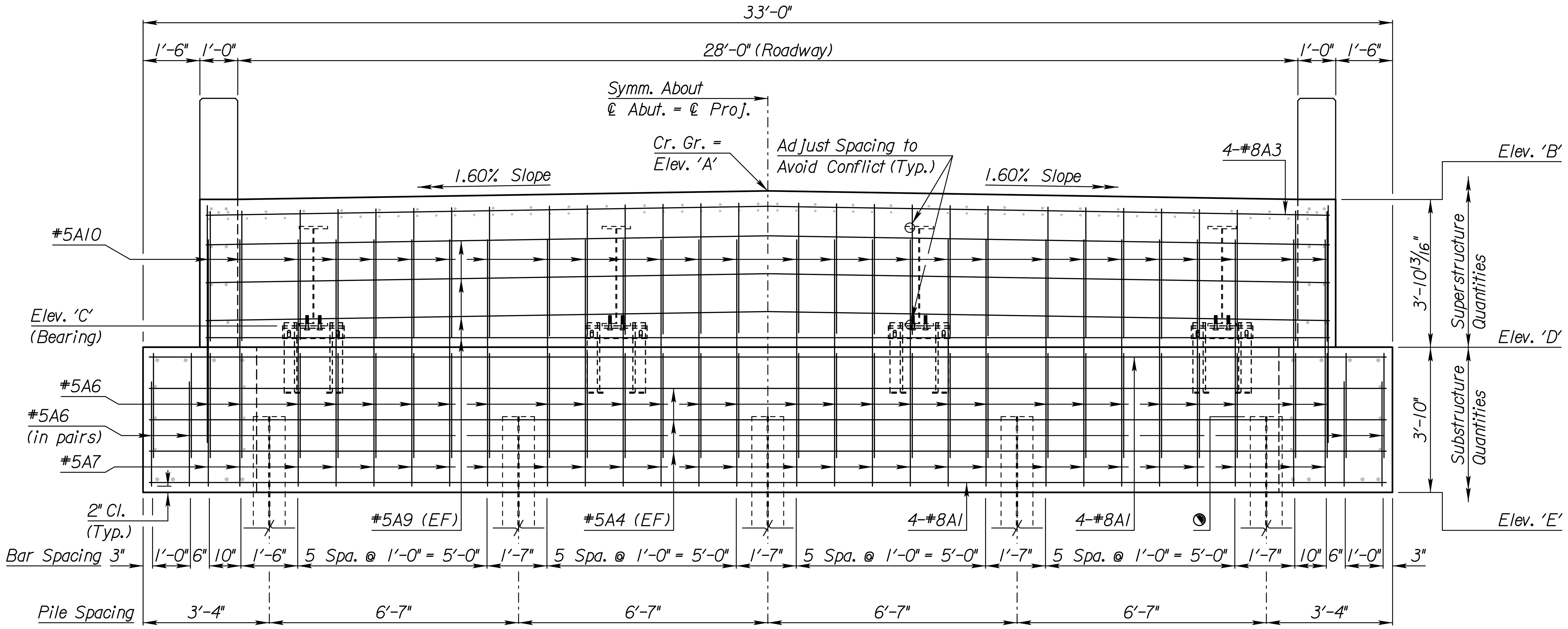
KDOT Graphics Certified 01-26-2022

Sheet No. 27

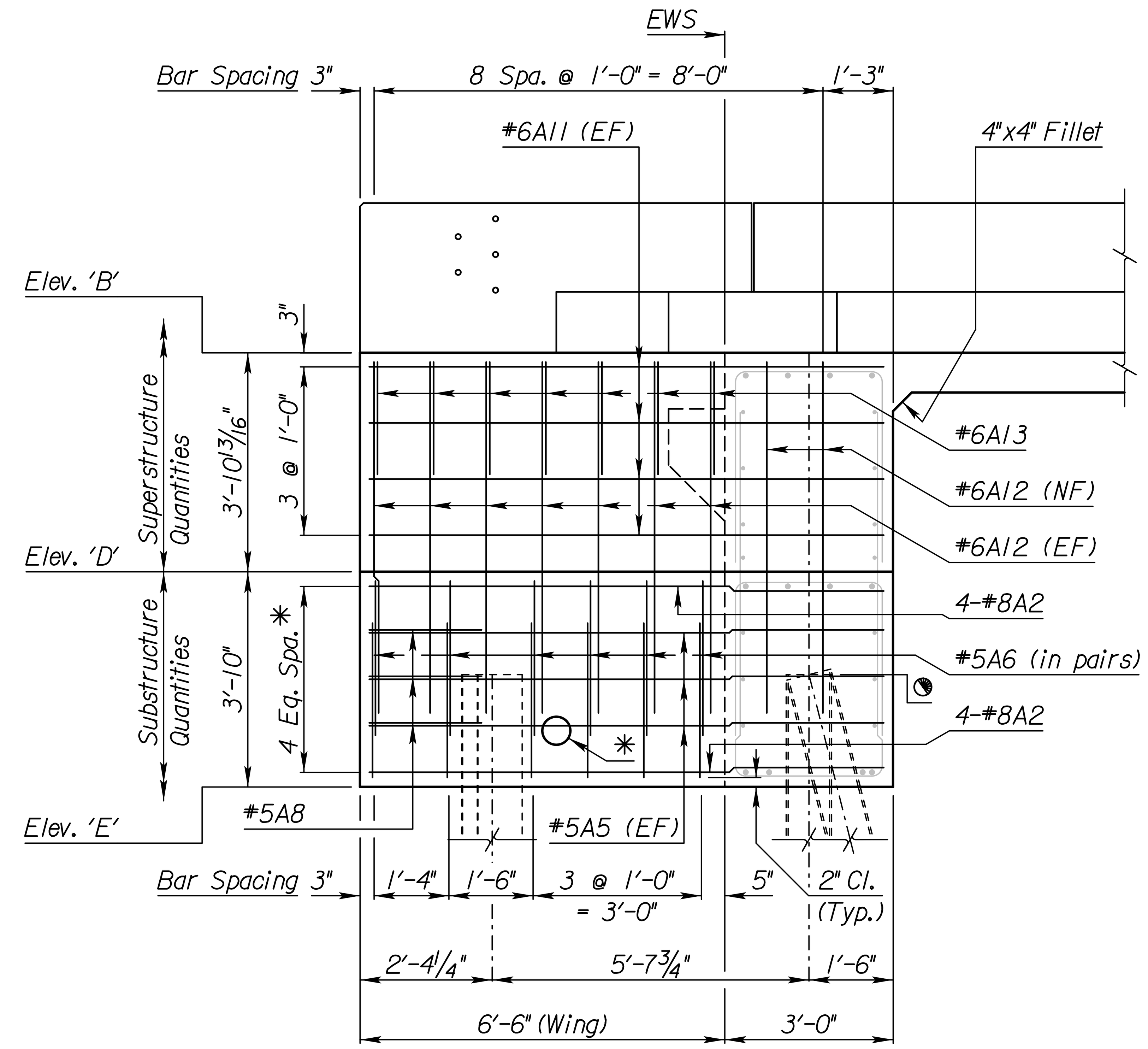
KDOT Graphics Certified

Plotted By: peter.madrigal
File: k608301\br026-07.dgn
Plot Date: 07-MAR-2022 12:00
Plot Location: Bridge

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	28	85

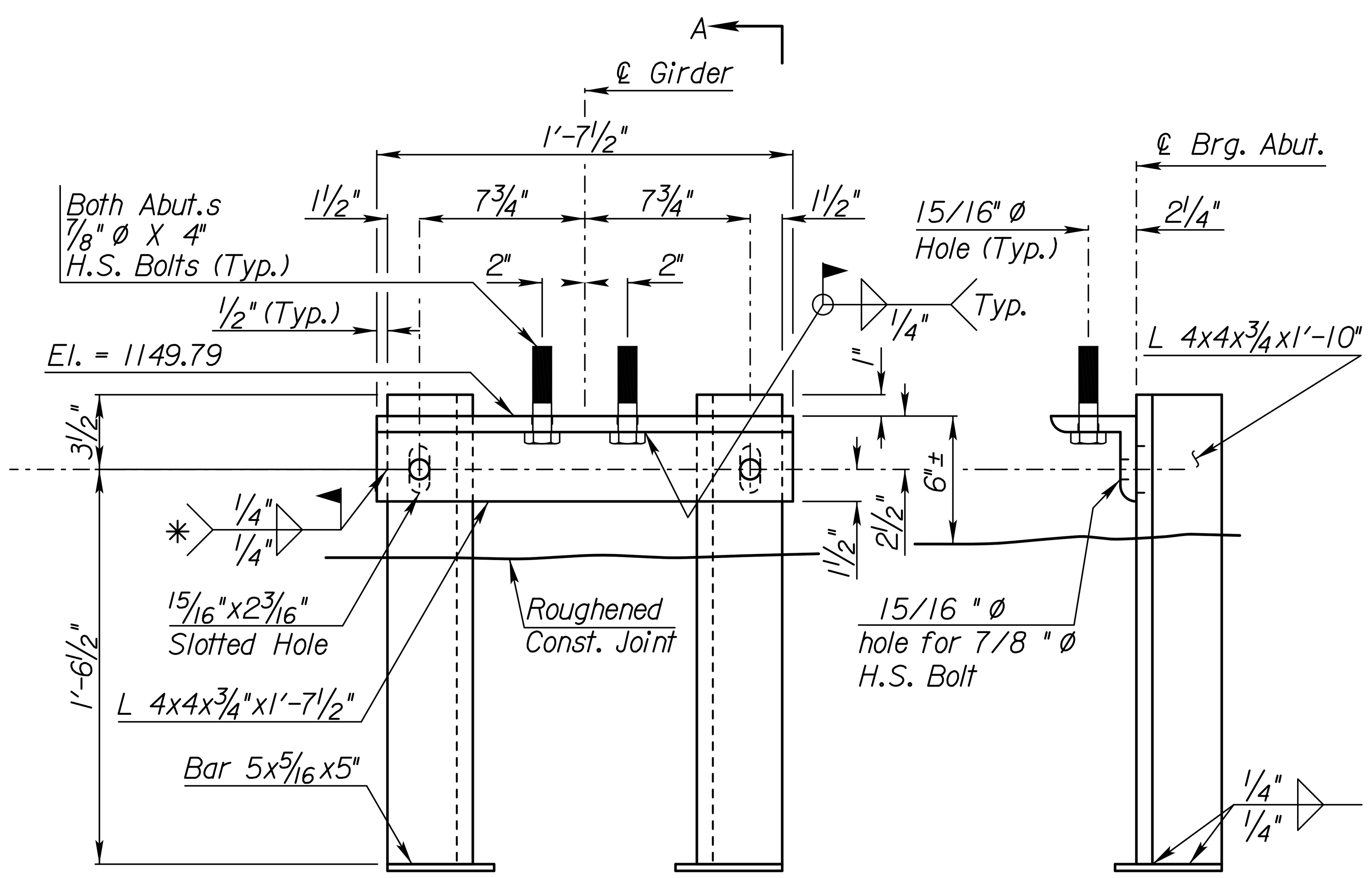


ABUTMENT ELEVATION



ABUTMENT WING ELEVATION

✳ Note: Construct a 6" Ø hole in the east wing footing of both abutments. Position reinforcing bars to fit. See "Abutment Aggregate Drain" sheets for location. Adjust spacing of reinforcing bars to maintian 2" Cl. near preformed hole.



✳ After verifying Bridge Seat Elevations, the angles shall be welded as shown.

ABUTMENT GIRDER SUPPORTS

(8 Required)
(ASTM A709 Gr. 36)

SECTION A-A

ERECTION ELEVATION CHECKS: After the abutment concrete has cured and before setting any structural steel, present verification to the Engineer that the elevations at the bearings match plan elevation (±1/4").

TABLE OF ELEVATIONS		
	Abut. No. 1	Abut. No. 2
Elev. A	1153.34	1153.34
Elev. B	1153.12	1153.12
Elev. C	1149.79	1149.79
Elev. D	1149.22	1149.22
Elev. E	1145.38	1145.38
Top of Pile Elevation ◔	1147.38	1147.38

◔ Note: Top of pile elevations are based on avialable information and the 2'-0" maximum embedment. Minimum embedment is 1'-6".

LEGEND

EF = Each Face
FF = Far Face
NF = Near Face

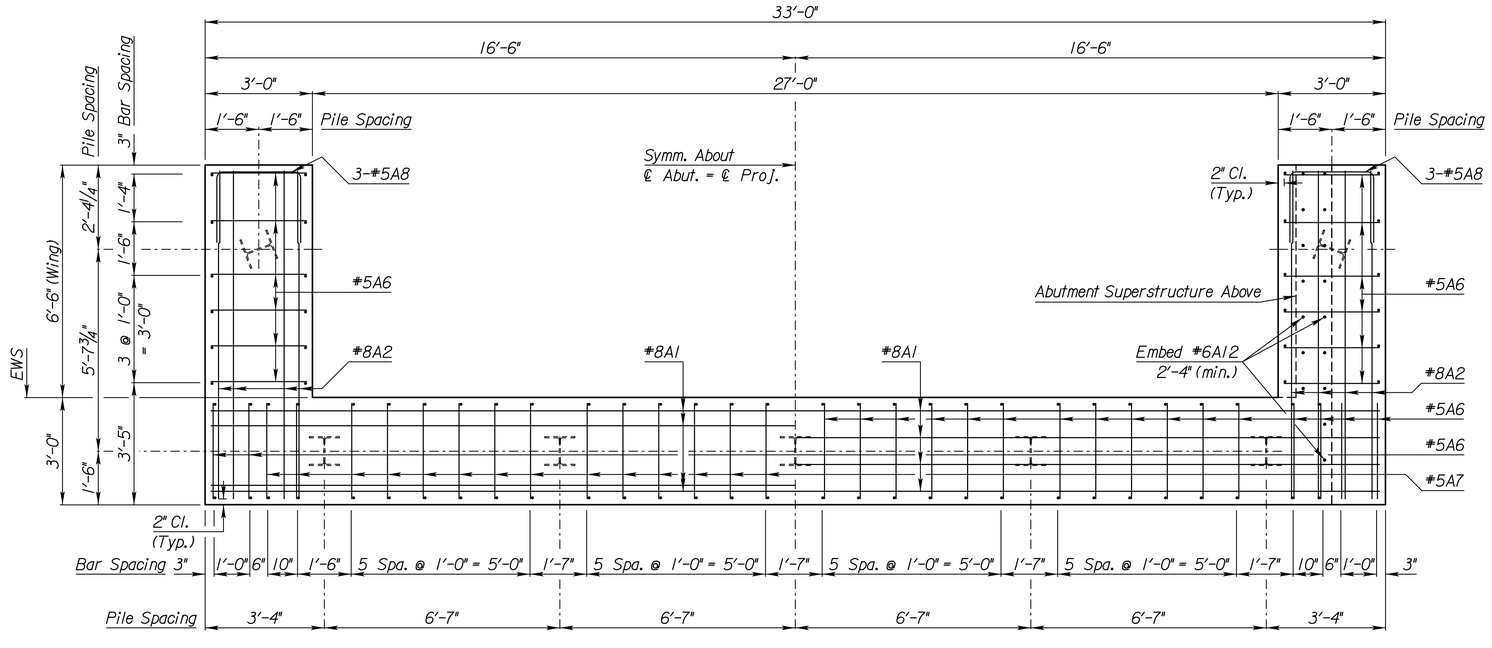
NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
ABUTMENT DETAILS
(PROPOSED CONSTRUCTION)
McDowell Creek Road over I-70
Proj. 70-31 KA-6083-01 Geary Co.

SHEET NO. OF	SCALE	APP'D	
DESIGNED PAM	DETAILED PAM	QUANTITIES PAM	CADD PAM
DESIGN CK. BDD	DETAIL CK. BDD	QUAN. CK. BDD	CADD CK. BDD

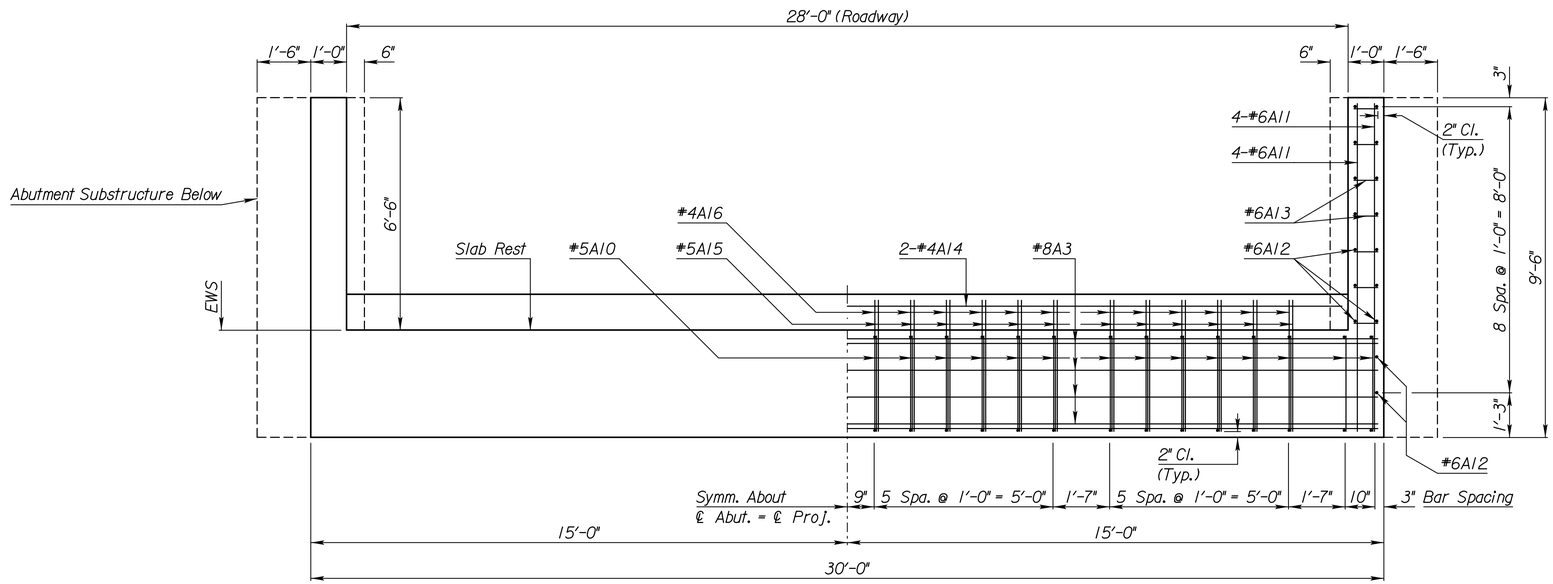
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	29	85



Bottom Face Top Face

PLAN OF ABUTMENT BEAM



PLAN OF ABUTMENT DIAPHRAGM

LEGEND

EF = Each Face
FF = Far Face
NF = Near Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
ABUTMENT DETAILS
(PROPOSED CONSTRUCTION)
McDowell Creek Road over I-70
Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF		SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

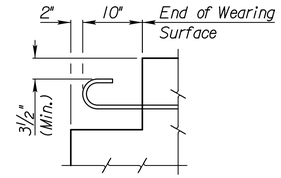
KDOT Graphics Certified 01-26-2022

Sheet No. 29

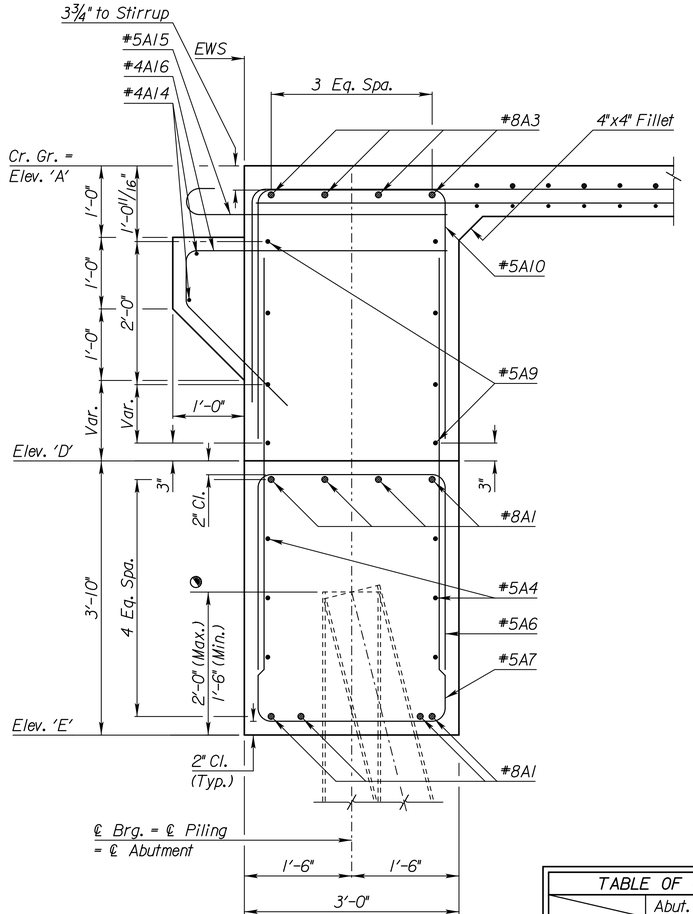
KDOT Graphics Certified

Plotted By: peter.madrigal | Plot Location: Bridge
File: ks60830\br026-09.dgn
Plot Date: 07-MAR-2022 12:01

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	30	85



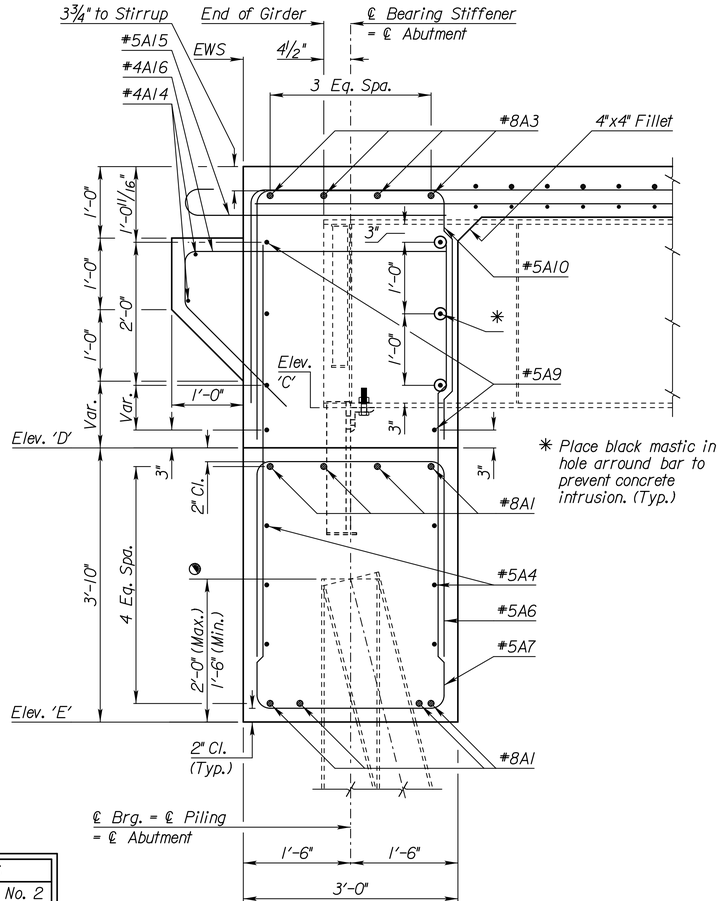
APPROACH SLAB TIE DETAIL



SECTION AT ℄ ABUTMENT

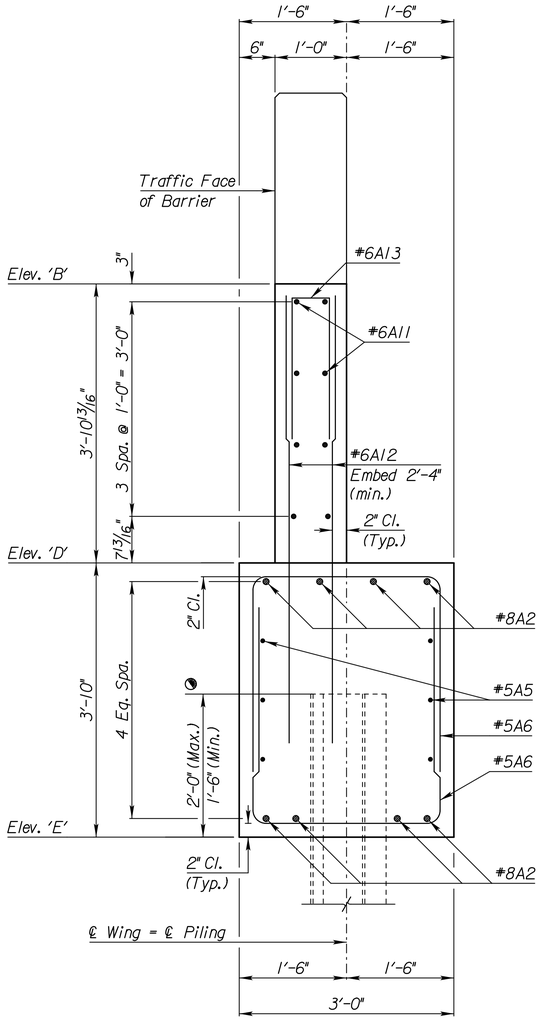
TABLE OF ELEVATIONS		
	Abut. No. 1	Abut. No. 2
Elev. A	1153.34	1153.34
Elev. B	1153.12	1153.12
Elev. C	1149.79	1149.79
Elev. D	1149.22	1149.22
Elev. E	1145.38	1145.38
Top of Pile Elevation ◔	1147.38	1147.38

◔ Note: Top of pile elevations are based on avialable information and the 2'-0" maximum embedment. Minimum embedment is 1'-6".



SECTION AT EXTERIOR GIRDER

✳ Place black mastic in hole arround bar to prevent concrete intrusion. (Typ.)



SECTION THRU WING

ERECTION ELEVATION CHECKS: After the abutment concrete has cured and before setting any structural steel, present verification to the Engineer that the elevations at the bearings match plan elevation (±1/4").

LEGEND
EF = Each Face
FF = Far Face
NF = Near Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
ABUTMENT DETAILS
(PROPOSED CONSTRUCTION)
McDowell Creek Road over I-70
Proj. 70-31KA-6083-01 Geary Co.

SHEET NO.	OF	SCALE		APP'D					
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD		PAM	
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.		BDD	

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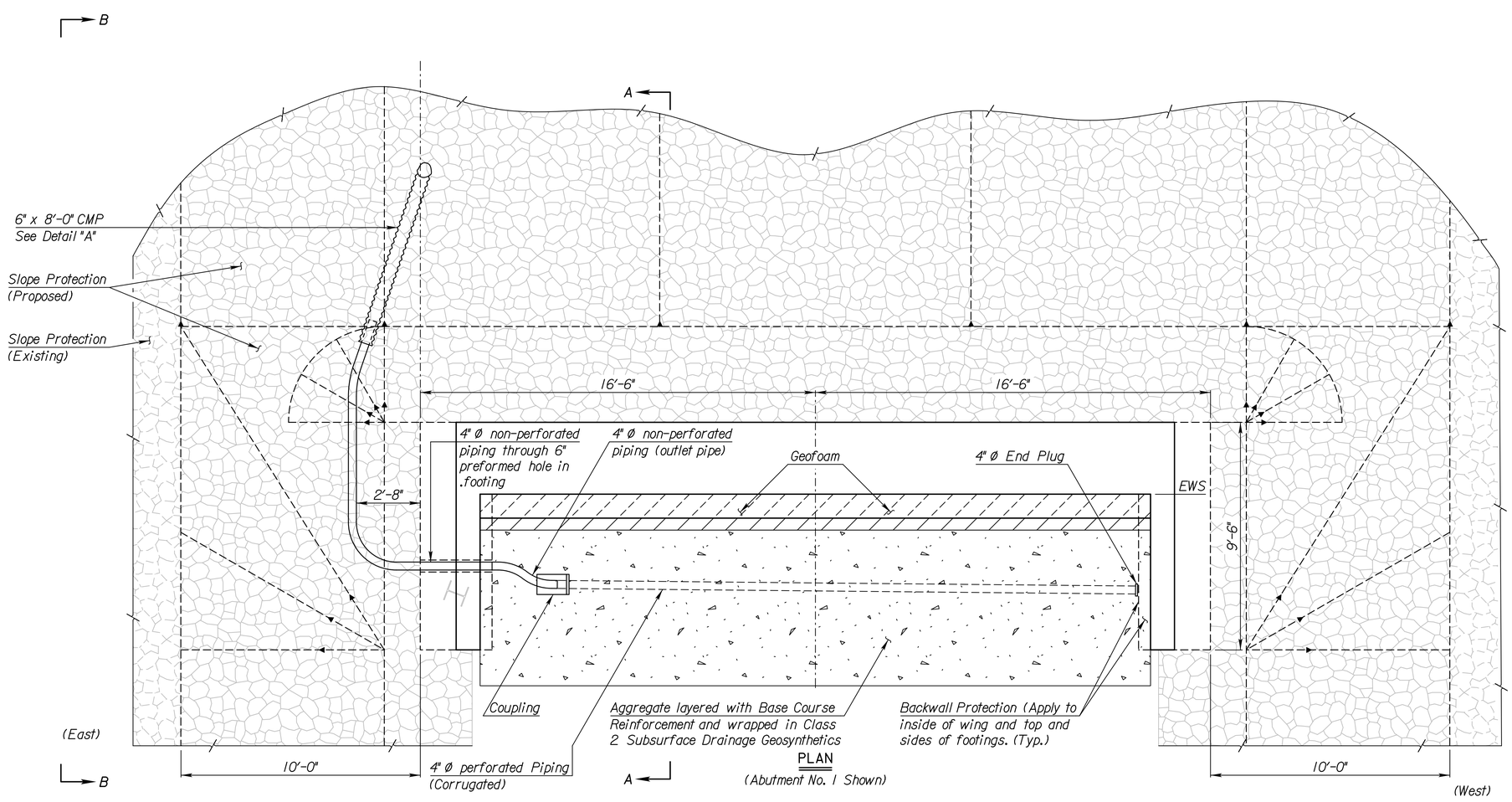
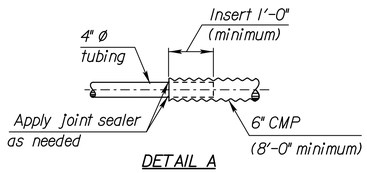
Sheet No. 30

KDOT Graphics Certified

Plotted By: peter.madrigal
Plot Location: Bridge
File: ka60830lbbr026-10.dgn
Plot Date: 07-MAR-2022 12:01

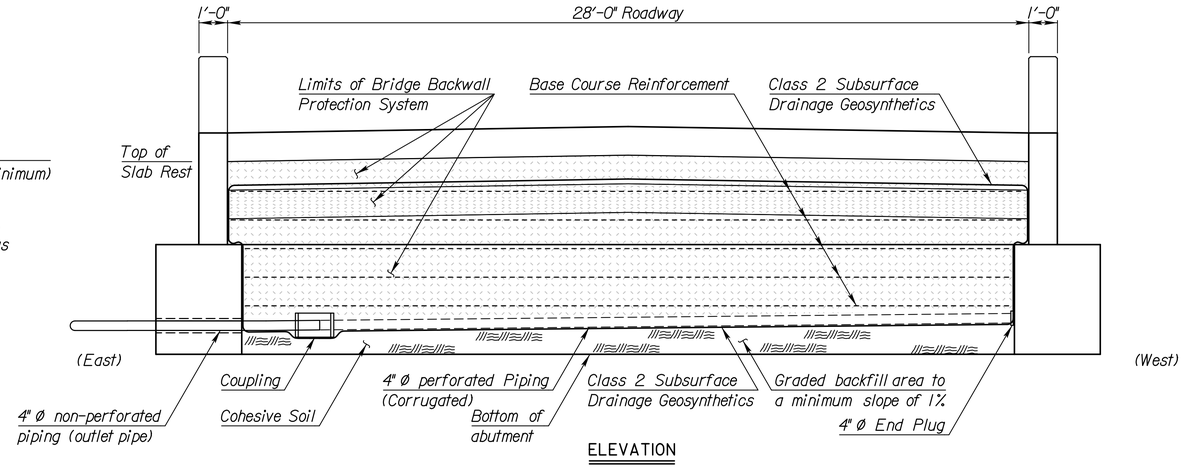
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	31	85





DETAIL A

Note: Place the CMP flowline 1'-0" above ditch flowline, toe of sideslope, or as shown on the Construction Layout.



ELEVATION

PIPE: Place perforated pipe within the limits and use non-perforated pipe outside the limits of the Abutment Aggregate Drain.

GEOFOAM: Use "Geofoam" that complies with ASTM D6817 EPS 12. Acceptance according to Type "C" certification. Bond this material to the back wall protection using materials recommended by the manufacturer.

GEOSYNTHETICS: Use material that complies with KDOT Specification Section 1710 Class 2 subsurface drainage fabric. Place the Class 2 subsurface drainage fabric on graded and compacted material shaped as shown. Allow for enough material so that the top can be overlapped and the end folded to completely enclose the aggregate drain. Place the perforated drain pipe and couple to non-perforated pipe as shown. Allow the non-perforated pipe to pass through a hole carefully cut in fabric. Place aggregate within fabric to just leave the top of the pipe visible. Verify the slope of the pipe, that it is not damaged or displaced and that the couplers are firmly coupled. Continue to back fill to the elevation and shape shown. Lap the top of the fabric a minimum of 3'-0", fold and wrap the ends to enclose the drainage materials. Secure the folds and wraps by sewing or approved methods.

AGGREGATE: Use aggregates that complies with KDOT Specifications for SB-1 or SB-2.

BASE COURSE REINFORCEMENT: Use "Base Course Reinforcement" that complies with KDOT Specification Division 1700 or approved material. Place this material in uniform layers without gaps or sags per the manufacturer's recommendations.

ABUTMENT AGGREGATE DRAIN: The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation Sheet. Backfill, compact & grade the cohesive soil to the limits shown. Place the bridge backwall protection, geofoam, geotextile, perforated pipe, alternating layers of aggregate and base course reinforcement as shown. Place the outlet pipe, the CMP, and the backfill. Guide post and coarse aggregate are subsidiary to this bid item. Guide post and coarse aggregate are not required if the CMP empties onto Slope Protection. Enclose the entire Abutment Aggregate Drain with the geotextile.

BRIDGE BACKWALL PROTECTION SYSTEM: Apply a non coal-tar Bridge Backwall Protective System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Repair any damage done at no charge to the state.

Compact the abutment backfill. See the KDOT Specifications.

Perforated pipe and non-perforated outlet pipe shall be corrugated polyethylene tubing conforming to the KDOT Specifications.

Fit the CMP end section with 1/4" galvanized mesh screen to prevent the entrance of rodents. Seal the joint between the outlet pipe and the end section with a joint sealer. Place Coarse aggregate at the outlet end as shown.

COHESIVE SOILS: Grade the bottom surface of the excavated area to drain as shown. Backfill this area with a cohesive type of soil. The soil will have a Unified Soil Classification of CL, CH, ML or MH according to ASTM D2487. Classification System with a minimum plasticity index of 13. Compact the material to Type A, MR-90 specifications. If the plasticity index cannot be met add and mix Bentonite, to the soil prior to placement and compaction so that the PI≥ 13.

SOIL CAP: The soil will have a Unified Soil Classification of CL or ML according to ASTM D2487. Compact to Type A, MR-90.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
ABUTMENT AGGREGATE DRAIN
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF		SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

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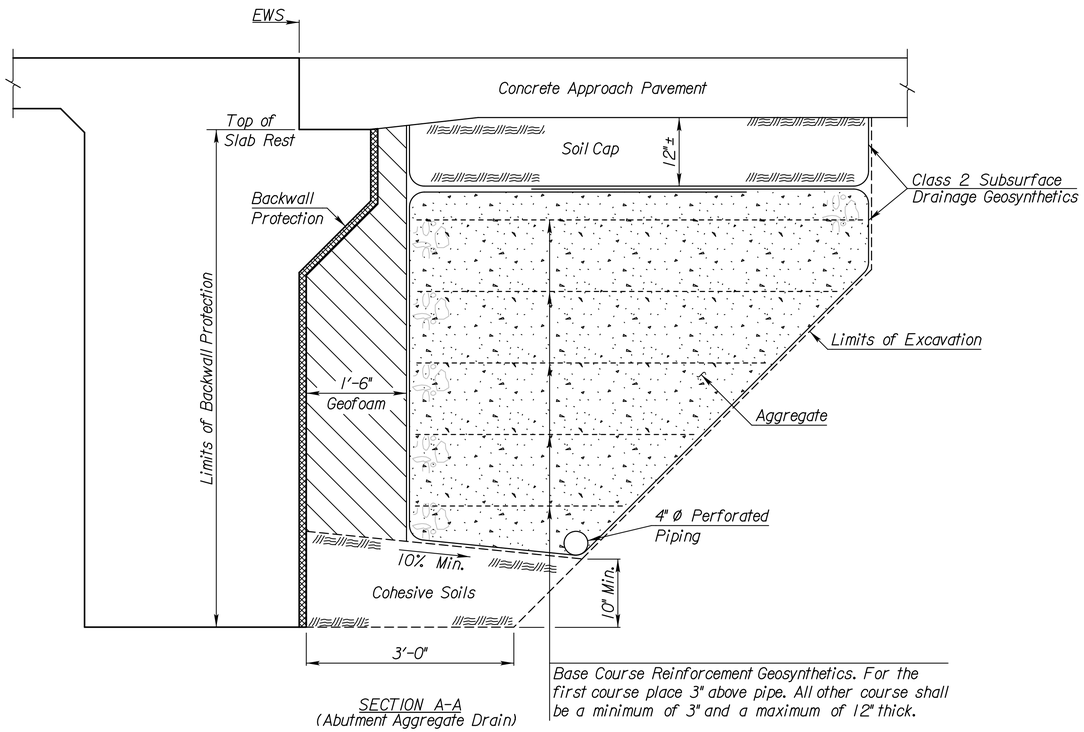
Sheet No. 31

KDOT Graphics Certified

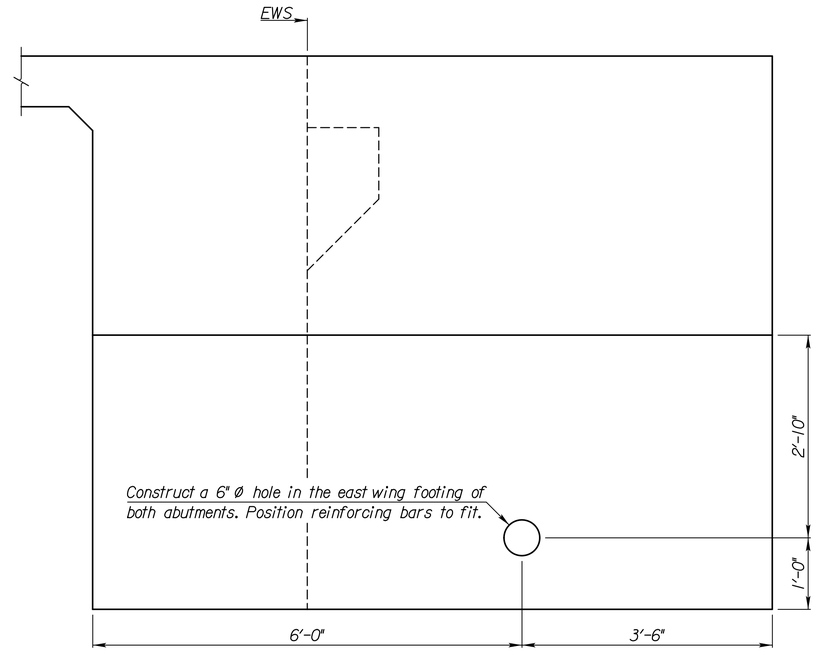
Plotted By: peter.madrigal Plot Location: Bridge
File: ks6083031/bbr026-11.dgn
Plot Date: 07-MAR-2022 12:01

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	32	85

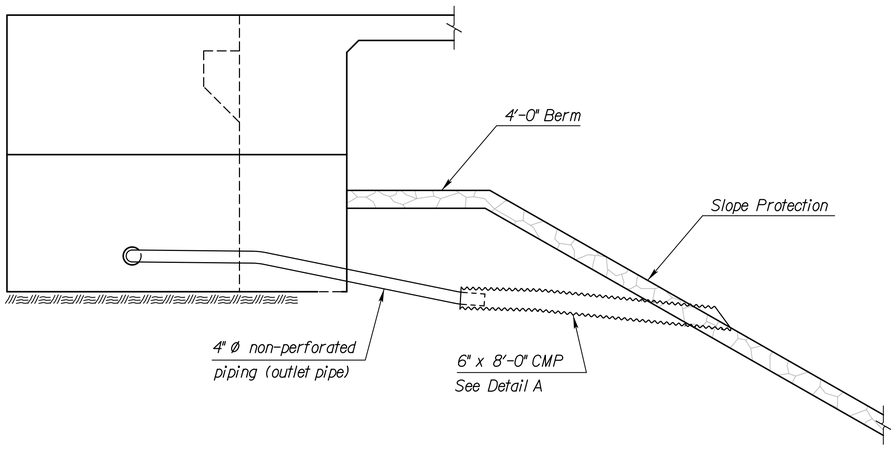


SECTION A-A
(Abutment Aggregate Drain)

Base Course Reinforcement Geosynthetics. For the first course place 3" above pipe. All other course shall be a minimum of 3" and a maximum of 12" thick.



Preformed Hole Detail



SECTION B-B
(Abutment Aggregate Drain)

SUMMARY OF QUANTITIES (2 Abutments)	
Abutment Aggregate Drain	50 Cu. Yds.
Bridge Backwall Protection System	64 Sq. Yds.
Items subsidiary to Abutment Aggregate Drain	
4" Ø Perforated Pipe	37 Lin. Ft.
4" Ø Outlet Pipe	48 Lin. Ft.
6" Ø CMP	16 Lin. Ft.
Guide Post	0 Each
Soil Cap	12 Cu. Yds.
Geosynthetics (Class 2 Subsurface Drainage)	224 Sq. Yds.
Geosynthetics (Base Course Reinforcement)	150 Sq. Yds.
Geofoam	13 Cu. Yds.

Plotted By: peter.madrigal
File: ks608301bbr026-12.dgn
Plot Date: 07-MAR-2022 12:01
Plot Location: Bridge

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
ABUTMENT AGGREGATE DRAIN
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO.	OF	SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

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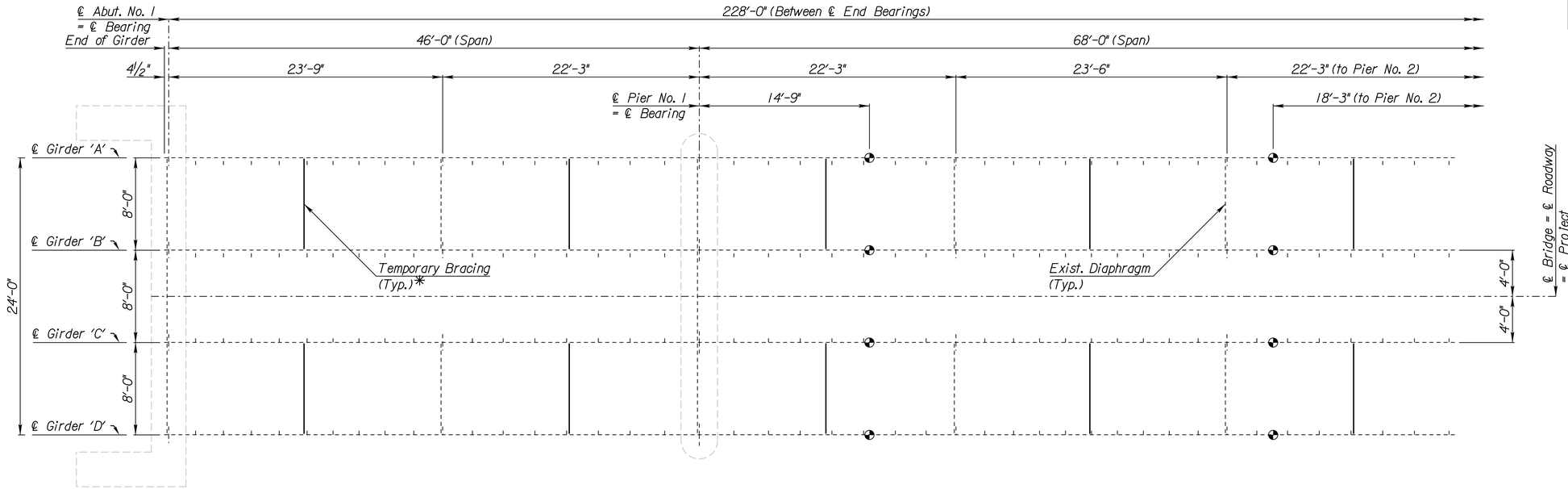
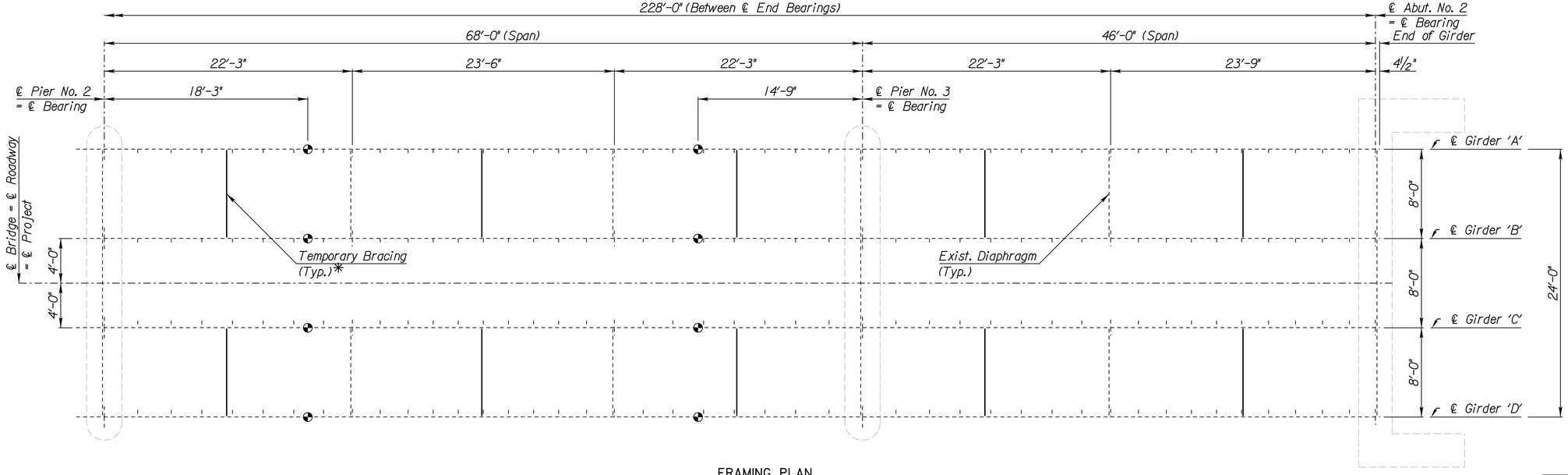
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	33	85



Scale: 1″ = 5 ft.



FRAMING PLAN

*Note: Ten (10) temporary bracings shall be placed in each of the exterior bays as shown for stability of the exterior girders, during placement of the slab. This work shall be subsidiay to Concrete (Grade 4.0)(AE)(SA)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 70-31-18.08 (026) Sta. 50+00.00

FRAMING PLAN

McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO.	OF	SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

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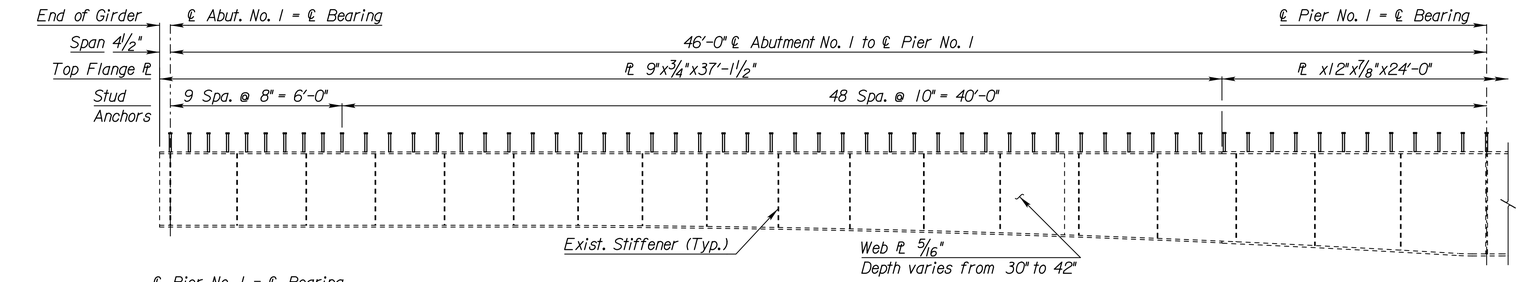
Sheet No. 33

KDOT Graphics Certified

Plotted By: peter.madrigal
File: ka6083301bbr026-13.dgn
Plot Date: 07-MAR-2022 12:01
Plot Location: Bridge

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	34	85



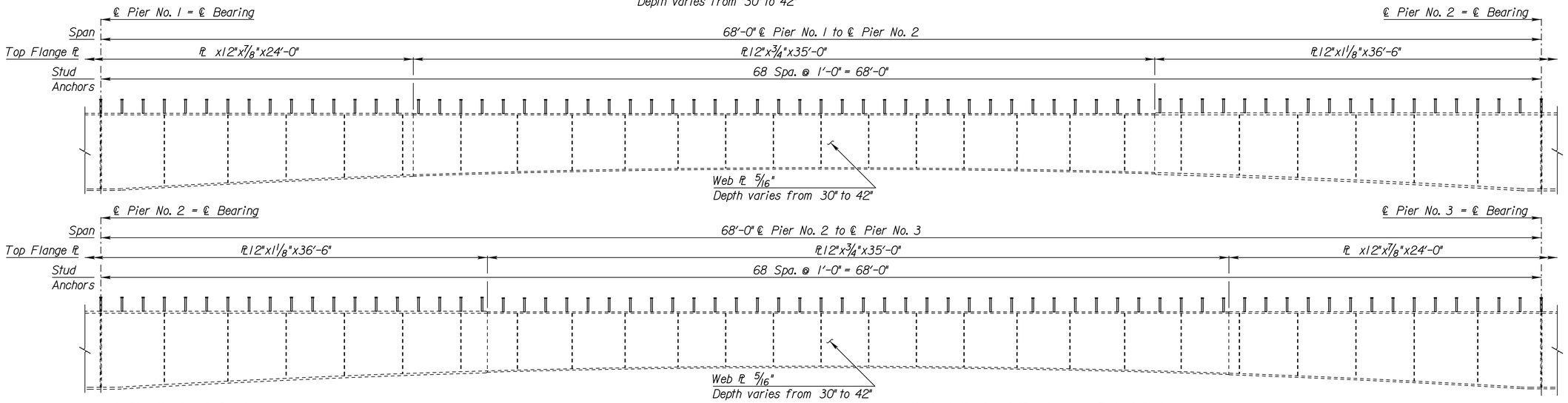
Note: Bottom flange width and thicknesses same as top flange.

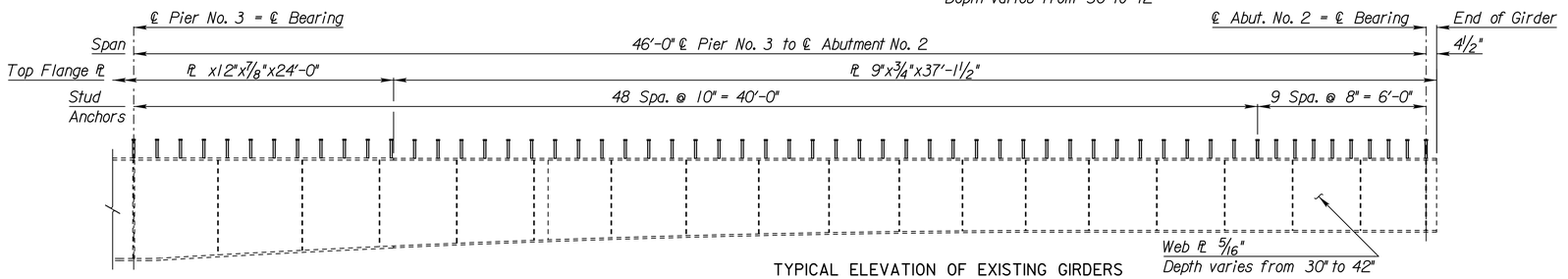
Note: Bottom flange splice locations same as top flange; bottom flange PL lengths are longer due to web haunch.

Note: Contractor to offset a line of shear studs as necessary to provide 1 1/2" clearance to the ℄ of an existing welded top flange splice.

NOTE: Survey Bridge deck before deck removal and survey top flanges after deck removal. Confirm fillet depth BEFORE ordering shear studs. Revise shear stud heights accordingly to meet criteria as per "5 or 7 Inch Stud" on this sheet.

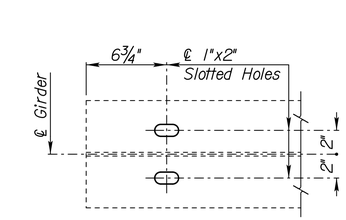
Note: All existing structural steel elements are to be painted. See "General Notes" sheets for additional information.



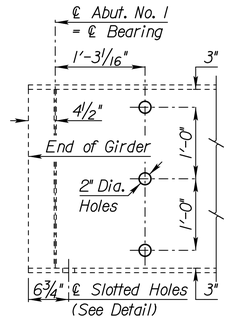


5" Studs on Exterior Girders
7" Studs on Interior Girders

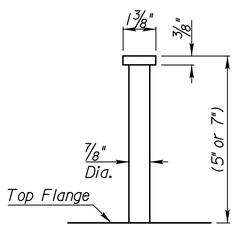
TYPICAL ELEVATION OF EXISTING GIRDERS
(showing spacing of Shear Studs on Girders)
(502 Welded Shear Studs per Girder)



BOTTOM FLANGE DETAIL
(Both Abut.s Typ. All Girders)

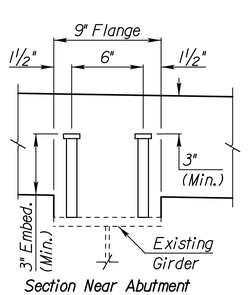


DETAIL OF DRILLED HOLES
(Both Abut.s Typ. All Girders)

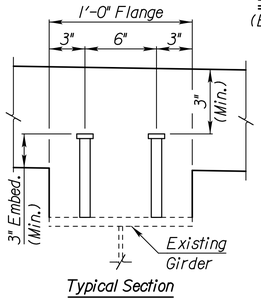


STUD ANCHOR DETAILS

Note: Dimensions of headed stud anchor may vary slightly from those shown.



Section Near Abutment



Typical Section

5 OR 7 INCH STUD
(7/8" Ø Typ.)

Bill of Studs (for information only)	
502	7/8" Ø x 7" Per Interior Girder
502	7/8" Ø x 5" Per Exterior Girder

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
GIRDER DETAILS
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF		SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

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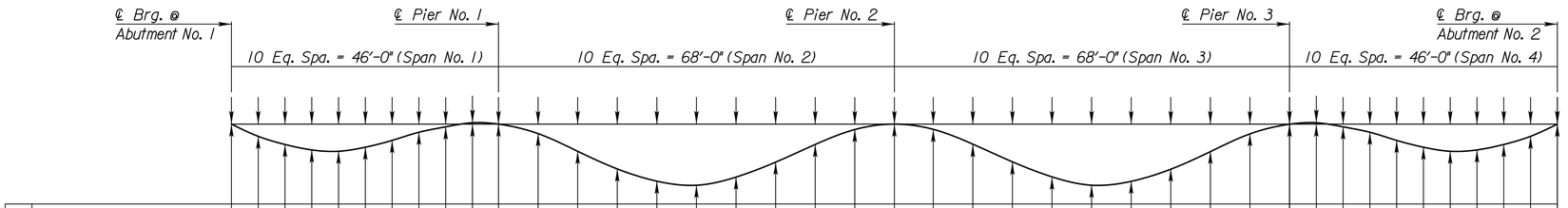
Sheet No. 34

KDOT Graphics Certified

Plotted By: peter.madrigal | Plot Location: Bridge
File: k608301\br026-14.dgn
Plot Date: 07-MAR-2022 12:01

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	35	85



Interior Girder	Concrete Dead Load (Composite + Non-Comp.)	0.000	0.007	0.012	0.016	0.016	0.014	0.010	0.006	0.002	0.000	0.000	0.006	0.016	0.026	0.034	0.036	0.031	0.022	0.012	0.003	0.000	0.003	0.012	0.022	0.031	0.036	0.034	0.026	0.016	0.006	0.000	0.000	0.002	0.006	0.010	0.014	0.016	0.016	0.012	0.007	0.000
	Total Dead Load (Steel + Concrete)	0.000	0.007	0.013	0.017	0.017	0.015	0.011	0.006	0.002	-0.001	0.000	0.007	0.018	0.029	0.038	0.040	0.035	0.025	0.013	0.004	0.000	0.004	0.013	0.025	0.035	0.040	0.038	0.029	0.018	0.007	0.000	-0.001	0.002	0.006	0.011	0.015	0.017	0.017	0.013	0.007	0.000
Exterior Girder	Concrete Dead Load (Composite + Non-Comp.)	0.000	0.006	0.011	0.014	0.014	0.012	0.009	0.005	0.002	0.000	0.000	0.005	0.014	0.023	0.029	0.031	0.027	0.019	0.010	0.003	0.000	0.003	0.010	0.019	0.027	0.031	0.029	0.023	0.014	0.005	0.000	0.000	0.002	0.005	0.009	0.012	0.014	0.014	0.011	0.006	0.000
	Total Dead Load (Steel + Concrete)	0.000	0.007	0.012	0.015	0.015	0.013	0.009	0.005	0.001	0.000	0.000	0.006	0.016	0.026	0.033	0.035	0.031	0.022	0.012	0.003	0.000	0.003	0.012	0.022	0.031	0.035	0.033	0.026	0.016	0.006	0.000	0.000	0.001	0.005	0.009	0.013	0.015	0.015	0.012	0.007	0.000

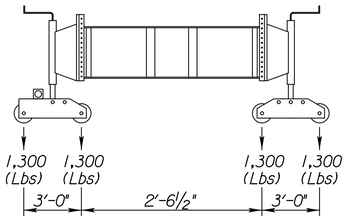
DEFLECTION NOTES

"Concrete Dead Load" ordinates represent the amount of deflection due to the deck pour, fillets, and barrier rails.

Survey top of deck before removal and survey top of girders after deck removal. Provide for beam deflections by adding the concrete dead load deflections to the survey results to achieve the original top of deck with elevation + 3/4" and with 1.60% cross slope. Increase or decrease the depth of the fillets to achieve this adjustment.

DEAD LOAD DEFLECTION DIAGRAM AT TENTH POINTS

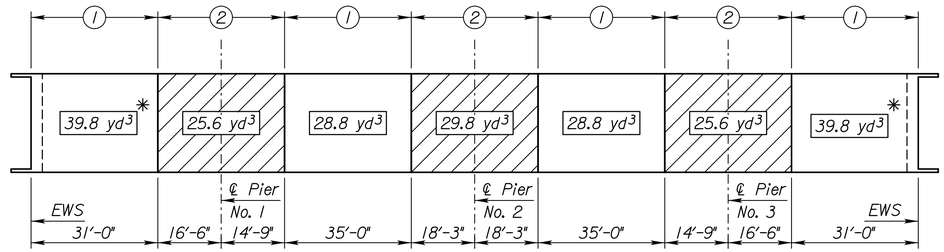
(All deflections and ordinates are in Ft.)
(Es = 29,000 ksi)



ASSUMED FINISHING MACHINE VALUES LOADING DIAGRAM

Note: Rotation (maximum = 1°) in the exterior girder was calculated assuming screed wheel loads as shown and placed 3" beyond the outside of the deck. The maximum overhang bracket spacing was assumed at 3 ft. The actual screed loadings or bracket spacing will be reflected in the design calculations for a torsional analysis of the exterior girder and bracing. The design calculations shall bear the seal of a licensed Professional Engineer. Submit accourding to KDOT Specifications Section 700 for falsework and formwork.

Provide temporary bracing at the top and bottom flanges of the exterior girders during concrete placement of the deck. The temporary bracing and labor for installation is subsidiary to the bid item, "Concrete (Grade 4.0) (AE) (SA)". Details for proposed temporary bracing shall be submitted with the falsework plans.



CONCRETE PLACING SEQUENCE

Place areas (1) first followed by areas (2) as shown above.

* Includes superstructure portion of Abutment Concrete.

FILLETS: Construct the finished deck to plan grade by varying the depth of the fillet over the girder to provide for girder profile, concrete dead load deflection and, if necessary, vertical curvature. After the girders are completely erected and the falsework bents are removed, profile each girder. Correct any variation between the actual profile and the concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the girders so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the beam girder be 8½ inches. Which includes a 3/4" deck raise.

The theoretical amount of concrete required for the fillets is 3.3 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

CONCRETE PLACING SEQUENCE: Segmental, combined or continuous pours are allowed by an approved alternate placing sequence. Any discontinuous pour must stop at a construction joint short of a pier.

The Contractor may place the corral rail continuously from one end of the bridge to the other.

CONCRETE PLACING: Place and hand vibrate all concrete for the abutments above the construction joints to the bottom of the deck just prior to the normal paving train operations. Do this work in a manner to avoid a cold joint in the abutments.

NO.	DATE	REVISIONS	BY	APP'D
3				
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KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
CAMBER DIAGRAMS
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO.	OF	SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

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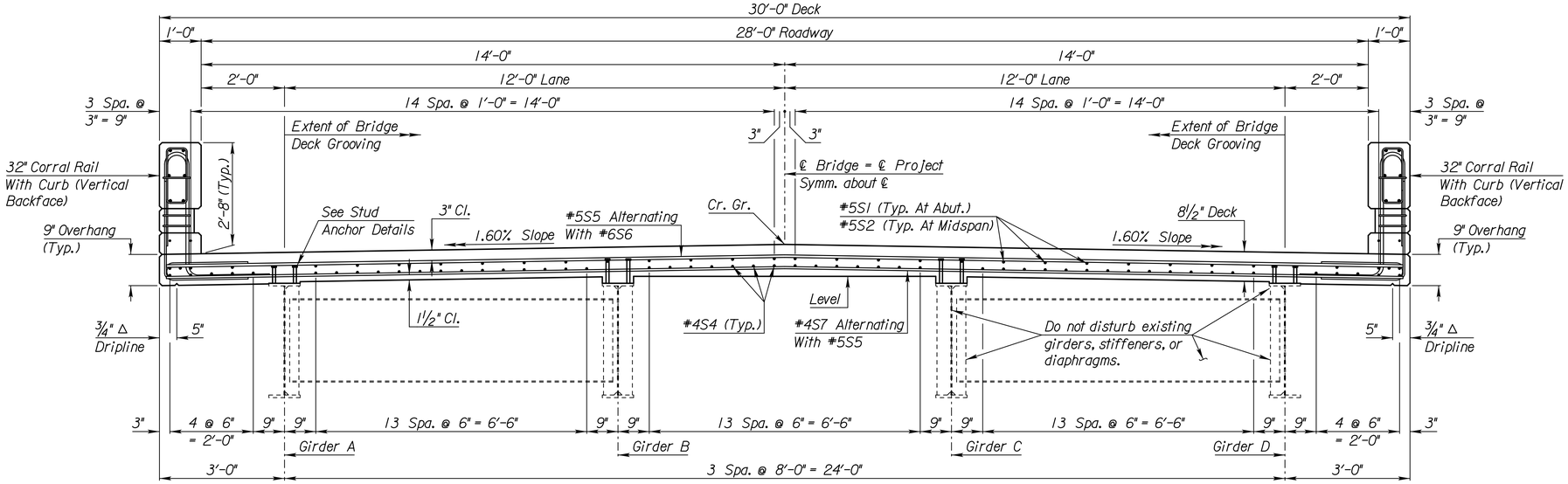
Sheet No. 35

KDOT Graphics Certified

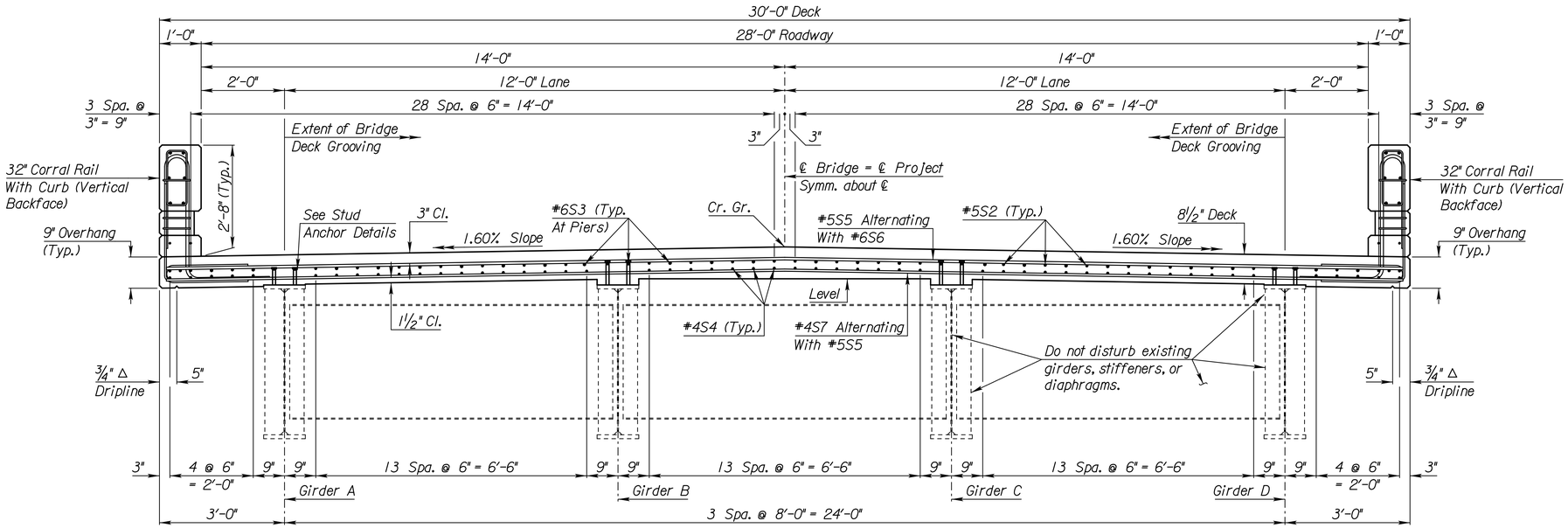
Plotted By: peter.madrigal | Plot Location: Bridge
File: ks60830ltbr026-16.dgn
Plot Date: 07-MAR-2022 12:01

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	36	85



TYPICAL SECTION NEAR ABUTMENT

(Midspan similar with 12" wide flange)



TYPICAL SECTION NEAR PIER

Plotted By: peter.madrigal | Plot Location: Bridge
File: ks60830lbr026-17.dgn
Plot Date: 07-MAR-2022 12:01

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 70-31-18.08 (026) Sta. 50+00.00

SUPERSTRUCTURE DETAILS

McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF	SCALE	APP'D			
DESIGNED PAM	DETAILED PAM	QUANTITIES PAM	CADD PAM		
DESIGN CK. BDD	DETAIL CK. BDD	QUAN. CK. BDD	CADD CK. BDD		

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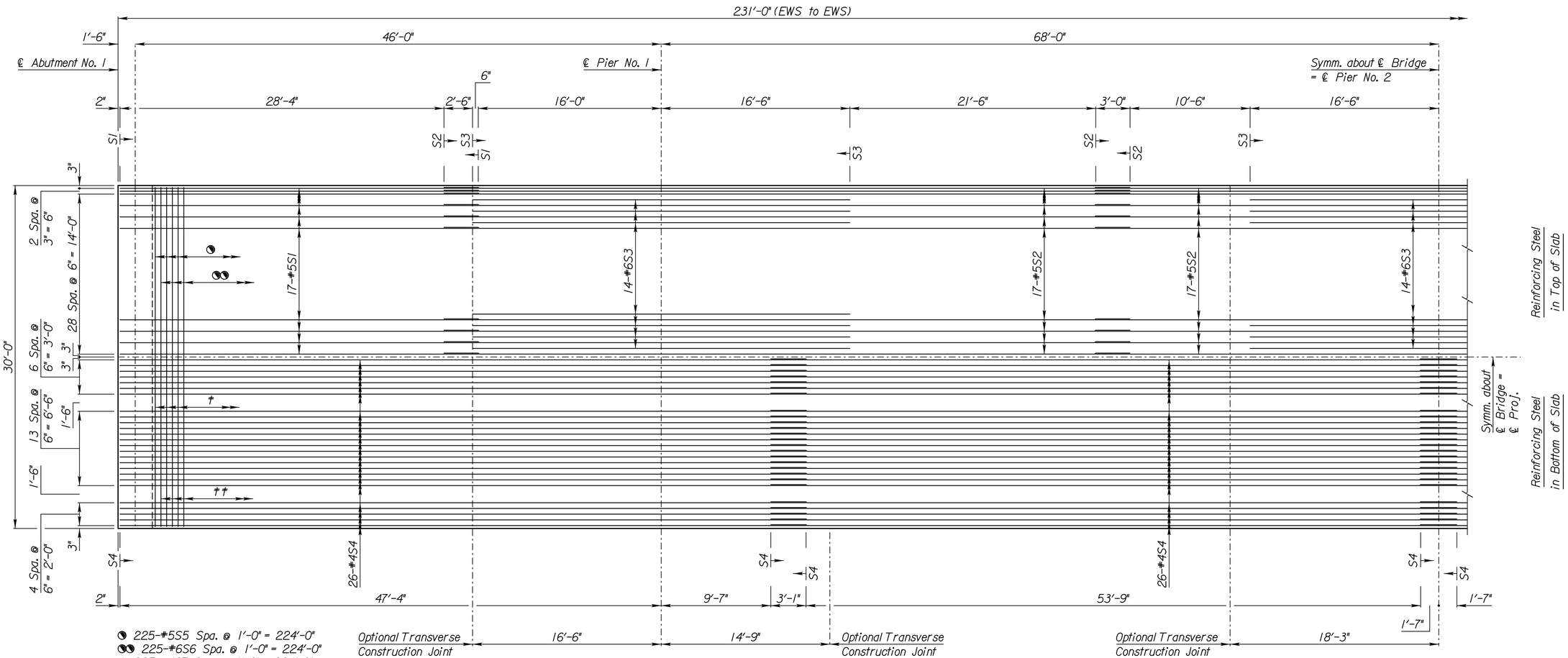
KDOT Graphics Certified

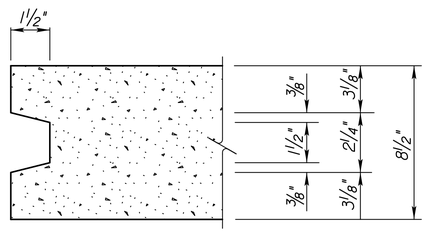
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	37	85



◔ 225-#5S5 Spa. @ 1'-0" = 224'-0"
◔◔ 225-#6S6 Spa. @ 1'-0" = 224'-0"
† 225-#4S7 Spa. @ 1'-0" = 224'-0"
†† 225-#5S5 Spa. @ 1'-0" = 224'-0"

Optional Transverse Construction Joint — 16'-6" — 14'-9" — Optional Transverse Construction Joint — Optional Transverse Construction Joint — 18'-3"

SLAB REINFORCING STEEL



TRANSVERSE CONSTRUCTION JOINT

Plotted By: peter.madrigal | Plot Location: Bridge
File: ks60830\bbr026-18.dgn
Plot Date: 07-MAR-2022 12:02

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
SLAB DETAILS
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO.	OF	SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

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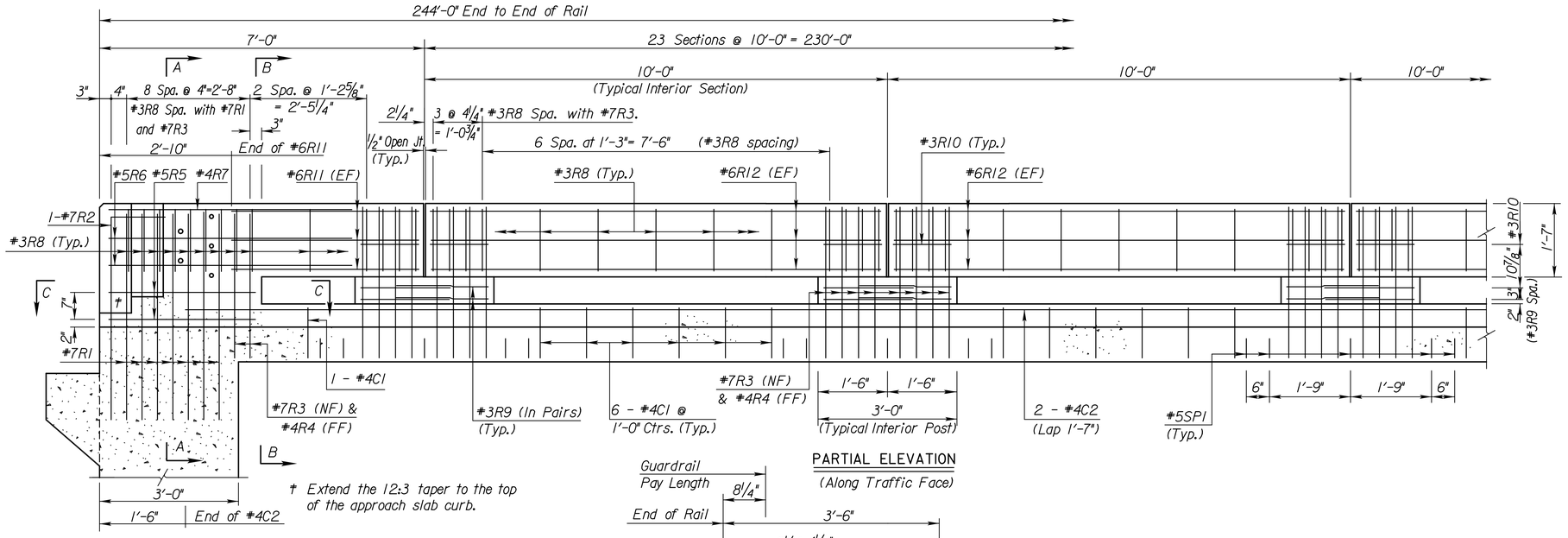
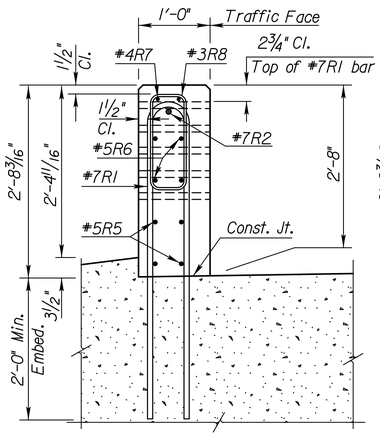
Sheet No. 37

KDOT Graphics Certified

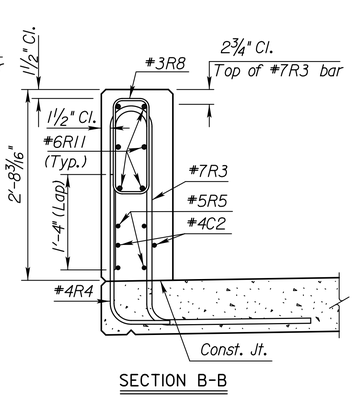
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	38	85



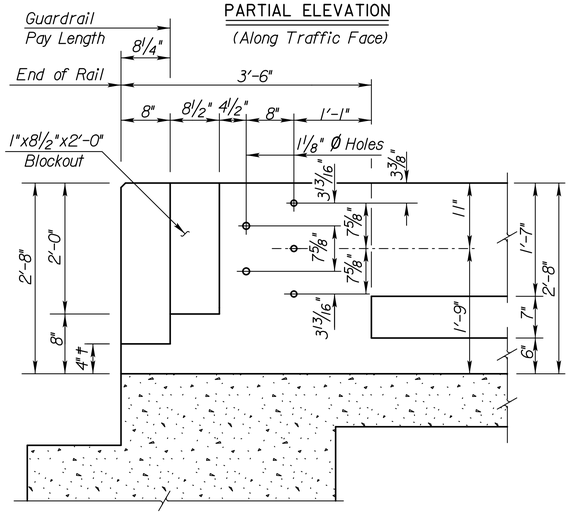
PARTIAL ELEVATION
(Along Traffic Face)



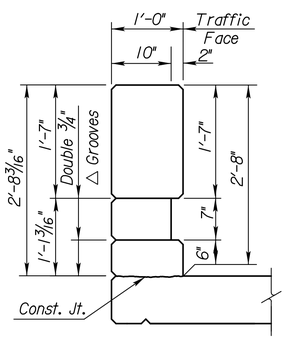
SECTION A-A



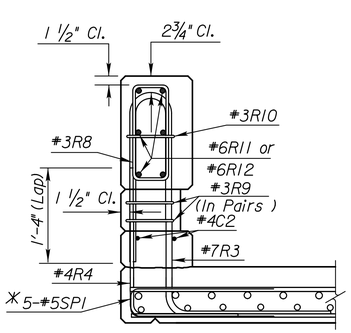
SECTION B-B



ELEVATION
(Dimensions at traffic face of rail.)

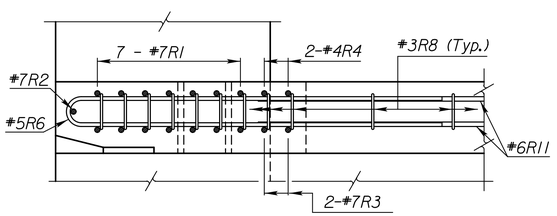


TYPICAL INTERIOR POST

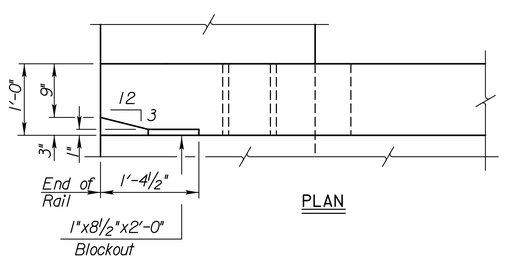


SECTION THRU POSTS

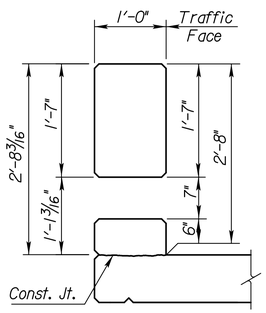
* The hook may be canted to provide clearance and/or fit between reinforcing.



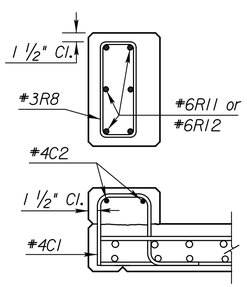
SECTION C-C



PLAN



TYPICAL SECTION BETWEEN POSTS



TYPICAL SECTION BETWEEN POSTS

3				
2	1/30/2012	Clarify C2 Termination	JPJ	TLF
1	6-30-05	Current Release		
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 70-31-18.08 (026) Sta. 50+00.00

32" KANSAS CORRAL RAIL (With Curb)

McDowell Creek Road over I-70

Proj. 70-31 KA-6083-01 Geary Co.

SHEET NO.	OF	SCALE		APP'D			
DESIGNED	PAM	DETAILED	PAM	QUANTITIES	PAM	CADD	PAM
DESIGN CK.	BDD	DETAIL CK.	BDD	QUAN. CK.	BDD	CADD CK.	BDD

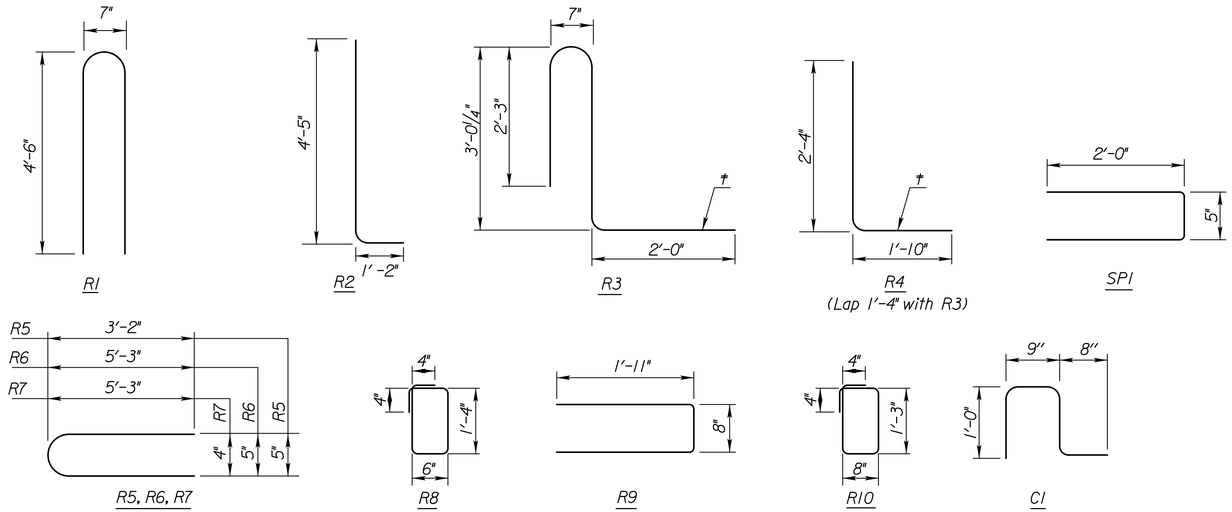
KDOT Graphics Certified 01-26-2022

Sheet No. 38

KDOT Graphics Certified

Std. Base File: br182d.dgn
Plotted By: peter.madrigal
File: ks608301\br026-20.dgn
Plot Date: 07-MAR-2022 12:02
Plot Location: Bridge

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	39	85



BENDING DIAGRAMS

All dimensions are out to out of bars.

* *Bend this leg to match the slope of the roadway.*

BILL OF REINFORCING STEEL
Grade 60 (Epoxy Coated)

	Straight Bars				Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Abutment	A1	8	16	32'-8"	A13	6	28	4'-8"
	A2	8	32	9'-2"				
	A3	8	8	29'-8"	A6	5	120	8'-2"
					A7	5	56	15'-8"
	A11	6	32	9'-2"	A8	5	12	6'-7"
	A12	6	64	6'-3"	A10	5	56	9'-6"
					A15	5	48	4'-3"
	A4	5	12	32'-8"				
	A5	5	24	9'-2"	A16	4	48	6'-5"
	A9	5	16	29'-8"				
	A14	4	4	27'-8"				
Deck	S3	6	84	33'-0"	S1	5	68	34'-4"
	S6	6	225	29'-8"				
					SP1	5	240	4'-5"
	S2	5	102	60'-0"				
	S5	5	450	29'-8"				
	S4	4	208	60'-0"				
	S7	4	225	29'-8"				
Rail	R11	6	24	4'-0"	R1	7	28	9'-3"
	R12	6	276	9'-8"	R2	7	4	5'-7"
					R3	7	392	7'-7"
	C2	4	28	35'-7"				
					R5	5	8	6'-6"
					R6	5	8	10'-8"
					C1	4	280	3'-5"
					R4	4	392	4'-2"
					R7	4	4	10'-8"
					R8	3	654	4'-4"
					R9	3	192	4'-6"
					R10	3	96	4'-6"

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	4-12-93	Current Release		

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 70-31-18.08 (026) Sta. 50+00.00
BILL OF REINFORCING AND BENDING DIAGRAM
McDowell Creek Road over I-70

Proj. 70-31KA-6083-01 Geary Co.

SHEET NO. OF	SCALE	APP'D					
DESIGNED PAM	DETAILED PAM	QUANTITIES PAM	CADD PAM
DESIGN CK. BDD	DETAIL CK. BDD	QUAN. CK. BDD	CADD CK. BDD

KDOT Graphics Certified 01-26-2022

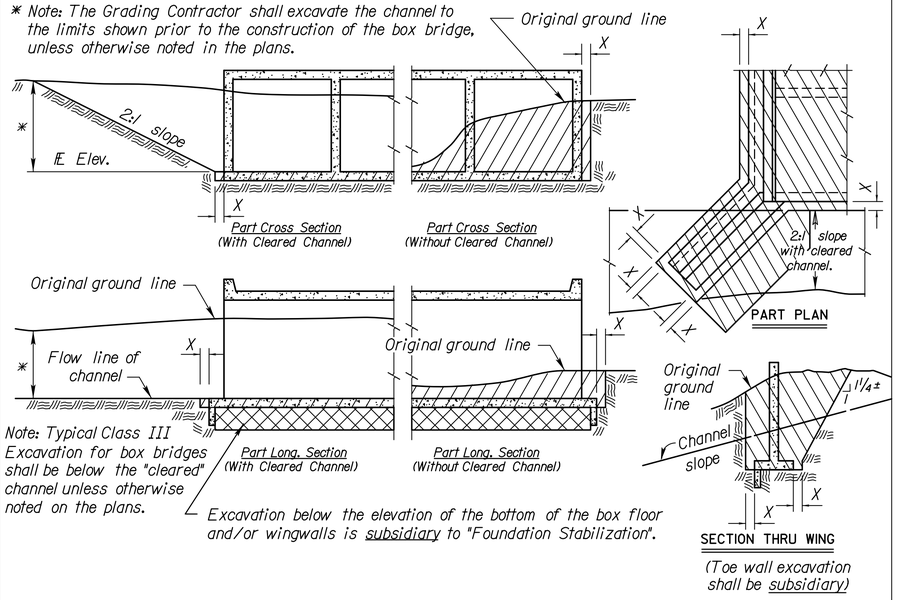
Sheet No. 39

KDOT Graphics Certified

Std. Base File: br182g.dgn
Plotted By: peter.madrigal
File: ka6083301bbr026-23.dgn
Plot Date: 07-MAR-2022 12:02
Plot Location: Bridge

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	40	85

* Note: The Grading Contractor shall excavate the channel to the limits shown prior to the construction of the box bridge, unless otherwise noted in the plans.

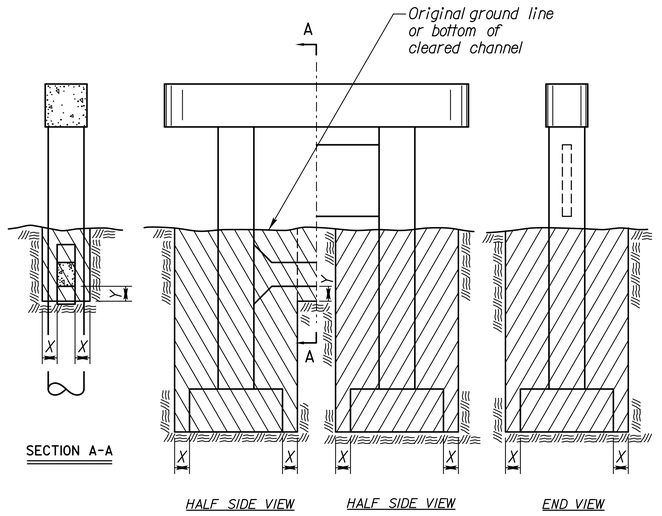


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

Excavation below the elevation of the bottom of the box floor and/or wingwalls is subsidiary to "Foundation Stabilization".

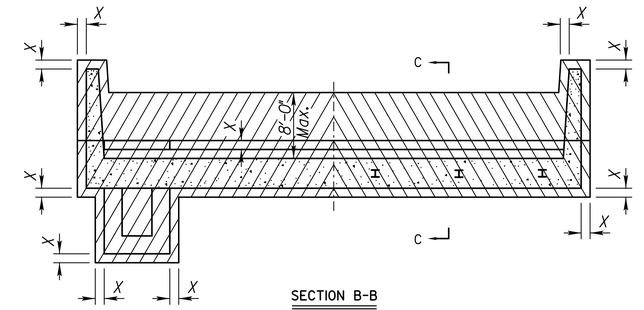
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

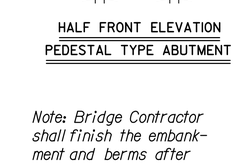
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.



EXCAVATION DETAILS FOR TYPICAL PIERS

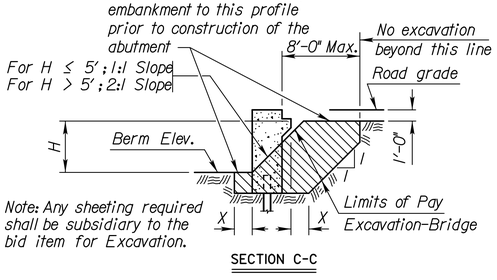
See detail when rock or shale (rock) is encountered. ⊛





Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

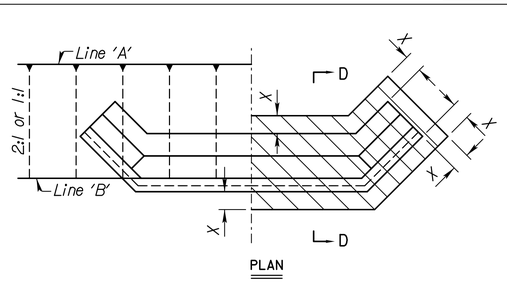
Grading Contractor to complete embankment to this profile prior to construction of the abutment

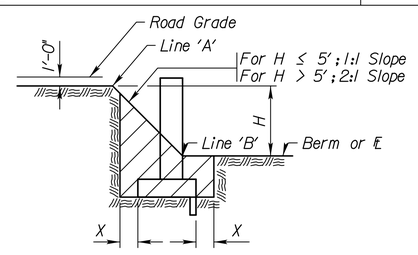


Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

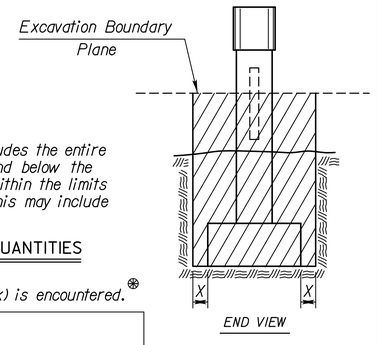
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

See detail when rock or shale (rock) is encountered. ⊛





EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



Note: Class II Excavation includes the entire volume of whatever nature found below the "Excavation Boundary Plane", within the limits specified for measurement. This may include water or air.

CLASS II EXCAVATION QUANTITIES

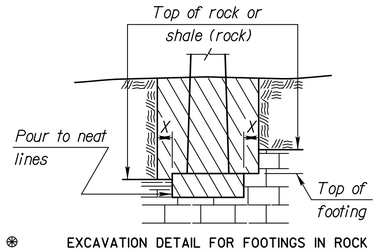
See detail when rock or shale (rock) is encountered. ⊛

Note: All bridge excavation shall be computed on the basis of the cross-hatch areas and boundary lines indicated on this sheet and the Excavation Boundary Plane on the Construction Layout.

Sides of trenches in hard or compacted soil including embankments shall be shored, sheeted, braced or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of the shoring, the sides of the trench above the 5 foot level may be sloped to preclude collapse. The slope for average soils shall be 1:1. If the angle of repose of the soil is less, flatter slopes shall be required.

Dimension "X" shall be 2'-0" unless indicated otherwise on the general plans.

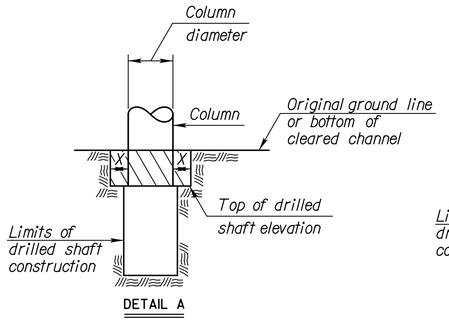
Dimension "Y" shall be 1'-6" unless indicated otherwise on the general plans.



⊛ EXCAVATION DETAIL FOR FOOTINGS IN ROCK OR SHALE (ROCK)

(Piers and Abutments)

Note: Excavation below top of rock, hard shale or below top of footing, whichever is lower, shall be to neat lines of the concrete construction.



DRILLED SHAFT DETAILS

Note: Whenever the limits of the drilled shaft construction are greater than the Column Diameter + 2X, the limits of Class I, II or III Excavation shall be the limits of the drilled shaft construction. (See Detail B)

NO.	DATE	REVISIONS	BY	APP'D
7				
6	8-15-12	Embeddement Excavation Subsidiary	JPJ	TLF
5	5-15-12	Revised Wing Excavation	JPJ	TLF
4	3-3-10	Revised Wing Excavation	JPJ	TLF
3	10-16-06	Revised "Foundation Stab." Note	JPJ	KFH
2	10-19-04	Concrete - Class to Grade	RAM	KFH
1	4-10-02	Added "Foundation Stab." Note	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BRIOOB

FHWA APPROVAL			4/17/10	APP'D	TERRY L. FLECK
DESIGNED	DETAILED	RDR	QUANTITIES	CADD	
DESIGN CK.	DETAIL CK.	LRR	QUAN.CK.	CADD CK.	

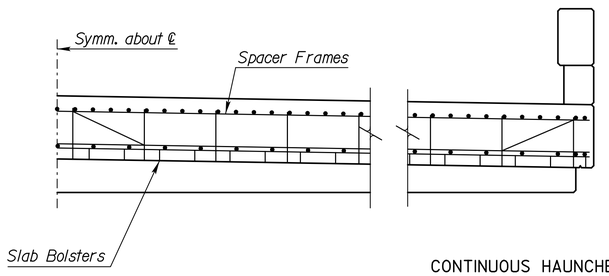
KDOT Graphics Certified 01-26-2022

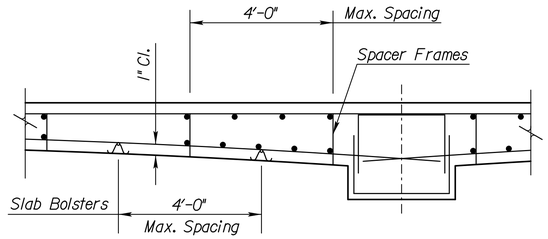
Sheet No. 40

KDOT Graphics Certified

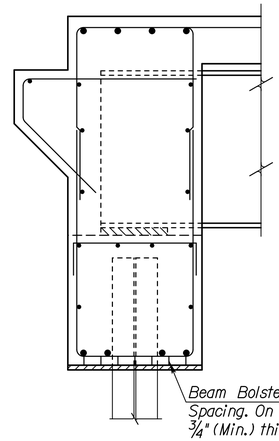
Std. Base File: br100.dgn | Plot Location: Bridge
Plotted By: peter.madrigal
File: ka6083O1/bbs026-01.dgn
Plot Date: 07-MAR-2022 12:02

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	41	85

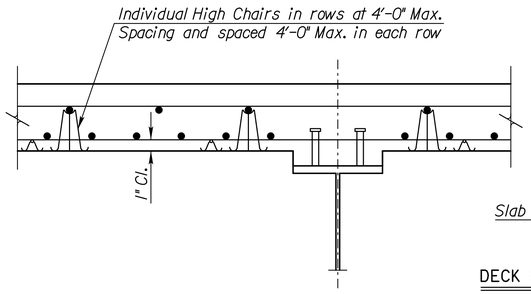


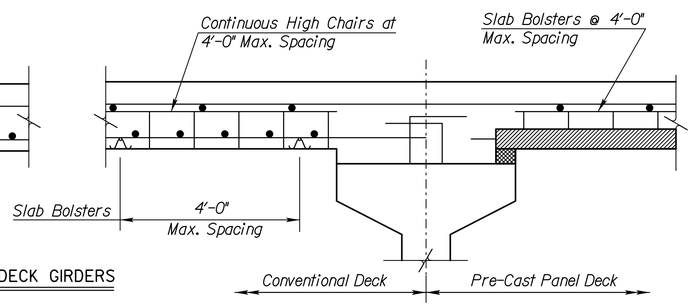


CONTINUOUS HAUNCHED SLAB



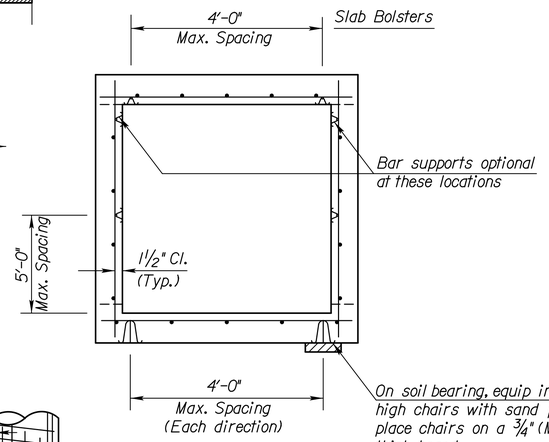
Beam Bolster at 4'-0" Max. Spacing. On soil bearing, place a 3/4" (Min.) thick board under bolster.



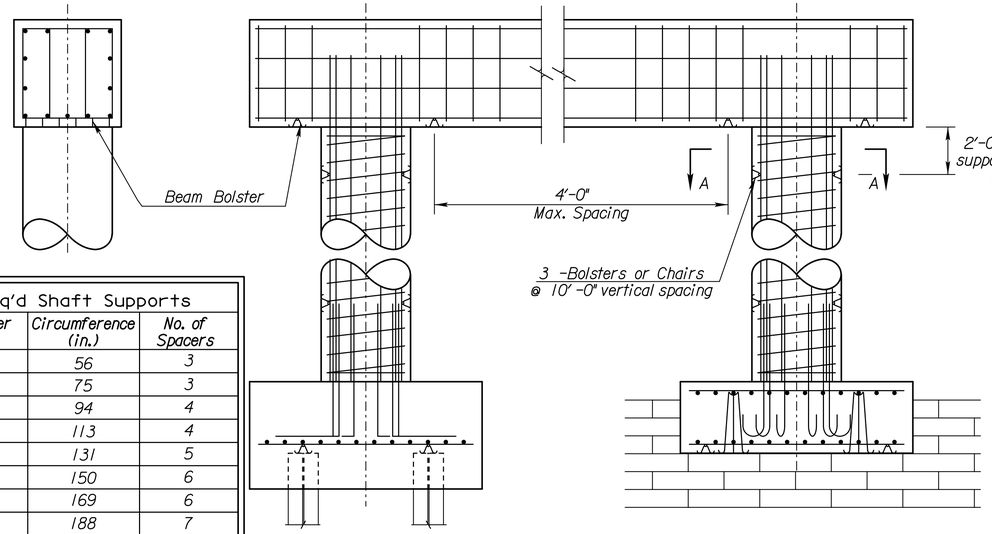


DECK GIRDERS

ABUTMENT

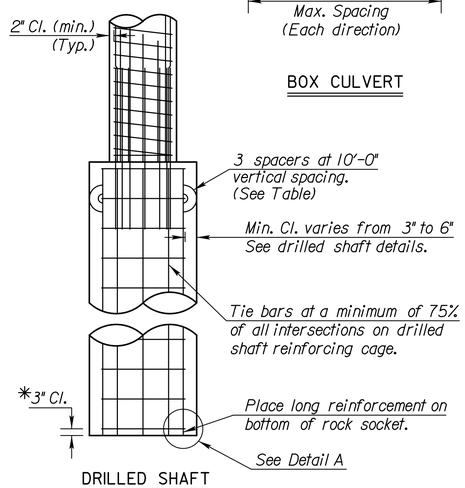


BOX CULVERT

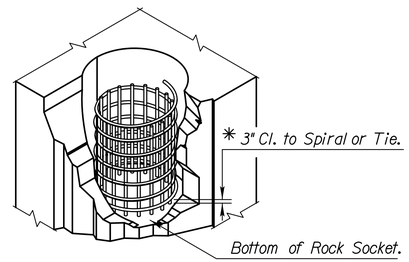


PIER

Req'd Shaft Supports		
Diameter (in.)	Circumference (in.)	No. of Spacers
18	56	3
24	75	3
30	94	4
36	113	4
42	131	5
48	150	6
54	169	6
60	188	7
66	207	7
72	226	8
78	244	9
84	263	9
90	282	10
96	301	11
102	320	11
108	339	12

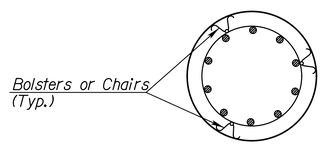


DRILLED SHAFT



DETAIL A

* Note: Longitudinal reinforcing steel is placed on the bottom of the rock socket. Maintain 3" clearance from the bottom of rock socket to the first spiral or tie bar.



SECTION A-A

GENERAL NOTES

Reference is made to the latest edition of the CRSI "Manual of Standard Practice" for recommended industry practices concerning reinforcing steel.

Use only the following types of bar supports:

1) Wire Bar Supports:

a) Epoxy coated reinforcing: Class 1 Protection
b) Non-epoxy coated reinforcing: Class 1, 2, or 3 Protection

2) Plastic Bar Supports

3) Supplementary bars

When securing epoxy coated reinforcement, use tie wires or metal clips that are epoxy or plastic coated.

Do not weld reinforcing steel to bar supports or to other reinforcing steel. Shop weld spacer frames for haunched slabs.

Tie bars at all intersections around the perimeter of each mat and at not less than 2'-0" centers or at every intersection, whichever is greater.

Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within 1/4" of that indicated on the plans.

Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

Construct any platforms, required for the support of workers and/or equipment during concrete placement, directly on the forms and not on the reinforcing steel.

Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.

NO.	DATE	REVISIONS	BY	APP'D
5	11-10-10	Column Bar Supports Req'd	JPJ	TLF
4	12-01-05	Drilled Shaft Spiral Steel Placement	JPJ	KFH
3	8-21-00	Added Pre-Cast Panel Detail	RAM	KFH
2	12-20-99	Added Haunched Slab Bolsters	RAM	KFH
1	12-09-99	Revised Drilled Shaft Clearance	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BRI20

FHWA APPROVAL	11-17-10	APP'D	Terry L. Fleck
DESIGNED RAM	DETAILED RAA	QUANTITIES	CADD RAA
DESIGN CK. LRR	DETAIL CK. RAM	QUAN.CK.	CADD CK. RAM

KDOT Graphics Certified 01-26-2022

Sheet No. 41

KDOT Graphics Certified

Std. Base File: bri20.dgn
Plotted By: peter.madrigal
File: ka60830\bbs026-02.dgn
Plot Date: 07-MAR-2022 12:02
Plot Location: Bridge

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	42	85

GUARDRAIL, STEEL PLATE (MGS)

LOCATION	STATION to STATION	SIDE	FLARE RATE	LENGTH (Lin. Ft.)	END TERMINAL (EACH) MGS-SRT FLARED Alt. #1 each	MGS-FLEAT FLARED Alt. #2 each	MGS-SKT PARALLEL Alt. #1 each	MGS-SOFTSTOP PARALLEL Alt. #2 each	✳MGS TYPE II each
McDowell Creek Rd.	48+53.94 - 48+85.20	Lt.	N/A	31.25'					
McDowell Creek Rd.	48+53.94 - 48+85.20	Rt.	N/A	31.25'					
McDowell Creek Rd.	51+14.80 - 51+46.06	Lt.	N/A	31.25'					
McDowell Creek Rd.	51+14.80 - 51+46.06	Rt.	N/A	31.25'					
TOTAL				125.00					

SLOPE DRAIN (STONE)

STATION	SIDE	" D"	" W"	LENGTH (lin. ft.)	△ Volume (Cu. yd)	REMARKS
48+52.00	Lt.	4"	5'	63.6'	3.9	
48+52.00	Rt.	4"	5'	53.4'	3.3	
51+48.17	Lt.	4"	5'	60.9'	3.8	
51+48.17	Rt.	4"	5'	56.3'	3.5	
TOTAL				234.2'	14.5	

△ For Information Only

FLUME INLET (CONCRETE)

STATION	SIDE	EACH	REMARKS
48+52.00	Lt.	1	
48+52.00	Rt.	1	
51+48.17	Lt.	1	
51+48.17	Rt.	1	
TOTAL		4	

SALVAGED TOPSOIL

STATION TO STATION	SIDE	SQ. YDS.
48+00.00 - 48+85.24	Lt.	474.1
48+00.00 - 48+85.24	Rt.	344.9
51+15.06 - 52+00.00	Lt.	443.1
51+15.06 - 52+00.00	Rt.	340.3
TOTAL		1,602.4

REMOVAL OF EXISTING STRUCTURES
✳ (For Information Only)

LOCATION	STATION TO STATION	SIDE	STRUCTURE	LENGTH FT.	REMARKS
McDowell Creek Rd.	48+53.94 - 48+85.05	Lt.	Existing Guardrail	31.25'	
McDowell Creek Rd.	48+53.94 - 48+85.05	Rt.	Existing Guardrail	31.25'	
McDowell Creek Rd.	51+14.95 - 51+46.06	Rt.	Existing Guardrail	31.25'	
McDowell Creek Rd.	51+14.95 - 51+46.06	Lt.	Existing Guardrail	31.25'	

✳ The listing shown may not be complete. Payment for structures or obstructions not listed but whose removal is required by the construction, as determined by the Engineer, shall not be paid for directly, but shall be included in the bid item "Removal of Existing Structures".

CONC. PAVEMENT (10" UNIFORM) (AE) (BR. APP.) AND BRIDGE APPROACH SLAB FOOTINGS

LOCATION	STATION TO STATION	LOCATION	Conc. Pvmt. (Unif.) (AE) SQ. YDS.	SLAB FOOTINGS CU. YDS.
Br. No. 70-31-18.08 (026)	47+51.50 - 48+84.50	North End	104.1	16.6
Br. No. 70-31-18.08 (026)	51+15.50 - 51+48.50	South End	104.1	16.6
TOTAL			208.2	33.2

PAVEMENT EDGE WEDGE (ROCK) /

LOCATION	STATION	SIDE	TONS
McDowell Creek Rd.	48+25.00 - 48+51.50	Lt.	0.7
McDowell Creek Rd.	48+25.00 - 48+51.50	Rt.	0.7
McDowell Creek Rd.	51+48.50 - 51+75.00	Lt.	0.7
McDowell Creek Rd.	51+48.50 - 51+75.00	Rt.	0.7
TOTAL			2.8

ϕ Computed at a rate of 156 lbs. per cu. ft. (Plan Weight)

CONCRETE PAVEMENT

LOCATION	STATION	SIDE	MAINLINE LANE: CONCRETE PAVEMENT 9" (PCCP) (AE) (NRDJ) SQ. YDS.	SHOULDER: CONCRETE PAVEMENT 9" (PCCP) (AE) (NRDJ) SQ. YDS.	MAINLINE LANE: GRANULAR Base (10") SQ. YDS.	SHOULDER: GRANULAR Base (10") SQ. YDS.	GUARDRAIL PAD: AGGREGATE SHOULDER (AS-1) (4") SQ. YDS.	REMARKS
McDowell Creek Rd.	48+25.00 - 48+51.50	Lt.					26.4	
McDowell Creek Rd.	48+25.00 - 48+51.50	Rt.					26.4	
McDowell Creek Rd.	51+48.50 - 51+75.00	Lt.					26.4	
McDowell Creek Rd.	51+48.50 - 51+75.00	Rt.					26.4	
McDowell Creek Rd.	48+25.00 - 48+84.50	Lt.	79.3	13.2				
McDowell Creek Rd.	48+25.00 - 48+84.50	Rt.	79.3	13.2				
McDowell Creek Rd.	51+15.50 - 51+75.00	Lt.	79.3	13.2				
McDowell Creek Rd.	51+15.50 - 51+75.00	Rt.	79.3	13.2				
TOTAL			317.3	52.8			105.6	

EARTHWORK

LOCATION	STATION TO STATION	EXCAVATION: COMMON CU.YDS.	COMMON VMF	≠ ROCK CU.YDS.	ROCK VMF	ϕCONTR. FURN. CU.YDS.	COMPACTION: TYPE AA MR-5-5 CU.YDS.	TYPE A MR-5-5 CU.YDS.		THROUGH CUTS NOT SUBGRADED: COMM. CU.YDS.	TYPE AA MR-5-5 CU.YDS.		✳ EMBANKMENT (CU.YDS.): INITIAL CONSOL.	SETTLE-MENT	◢ PLACE. SELECT SOIL CU.YDS.
McDowell Creek Rd.	43+30.00 - 53+50.00	61	0.78	280	1.00	332	95	207		195	195				
TOTALS		61		≠ 280		332	95	207		195	195				

/ Assumed VMF for Contractor furnished excavation is 0.78

≠ Existing pavement to be wasted.

✳ Subsidiary (see General Note).

◢ See General note.

RECAPITULATION OF BRIDGE QUANTITIES

BRIDGE NUMBER	STATION	SEE SHEET NO.
70-31-18.08 (026)	50+00.00	xx

RECAPITULATION OF ROAD QUANTITIES

ITEM	QUANTITY	UNIT
Contractor Construction Staking	L.S.	Lump Sum
Field Office and Laboratory (Type C)	1	Each
Foundation Stabilization (Set Price)	1	Cu. Yd.
Mobilization	L.S.	Lump Sum
Mobilization (DBE)	L.S.	Lump Sum
Removal of Existing Structures	L.S.	Lump Sum
Concrete For Seal Course (Set Price)	1	Cu. Yd.
Clearing And Grubbing	L.S.	Lump Sum
Common Excavation (Rural Small)	256	Cu. Yd.
Common Excavation (Contractor Furnished)	332	Cu. Yd.
Rock Excavation	280	Cu. Yd.
Compaction of Earthwork (Type A) (MR-5-5)	207	Cu. Yd.
Compaction of Earthwork (Type AA) (MR-5-5)	290	Cu. Yd.
Concrete Pavement (9" Uniform) (AE) (NRDJ)	371	Sq. Yd.
Aggregate Shoulder (AS-1) (4")	106	Sq. Yd.
Water (Grading)(Set Price)	1	MGal
Salvaged Topsoil	1,602	Sq. Yd.
Guardrail, Steel Plate (MGS)	125.00	Lin. Ft.
Bridge Approach Slab Footing	33.2	Cu. Yd.
Mowing	0.2	PMPS
Concrete Pavement (10" Uniform) (AE) (Br. App.)	209	Cu. Yd.
Flume Inlet (Concrete)	4	Each
Pavement Edge Wedge (Rock)	3	Tons
Slope Drain (Stone)	235	Lin. Ft.
Curing Environment	L.S.	Lump Sum
Temporary Surfacing Material (Aggregate) (Set Price)	1	Cu. Yd.
Water (Aggregate Shoulders) (Set Price)	1	MGal
Water for Earthwork Compaction (Set Price)	1	MGal

For Temporary Erosion and Pollution Control Quantities, See Sh. No. 44
For Seeding Quantities, See Sh. No. 53
For Signing Quantities, See Sh. No. 62
For Traffic Control Quantities, See Sh. No. 79

NO.	DATE	REVISIONS	BY	APP'D
2	1-14-08	Rem. Drainage Structure summary	S.W.K.	J.O.B.
1	1-9-91	Detailed on CADD	R.J.S	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

~~RD050~~

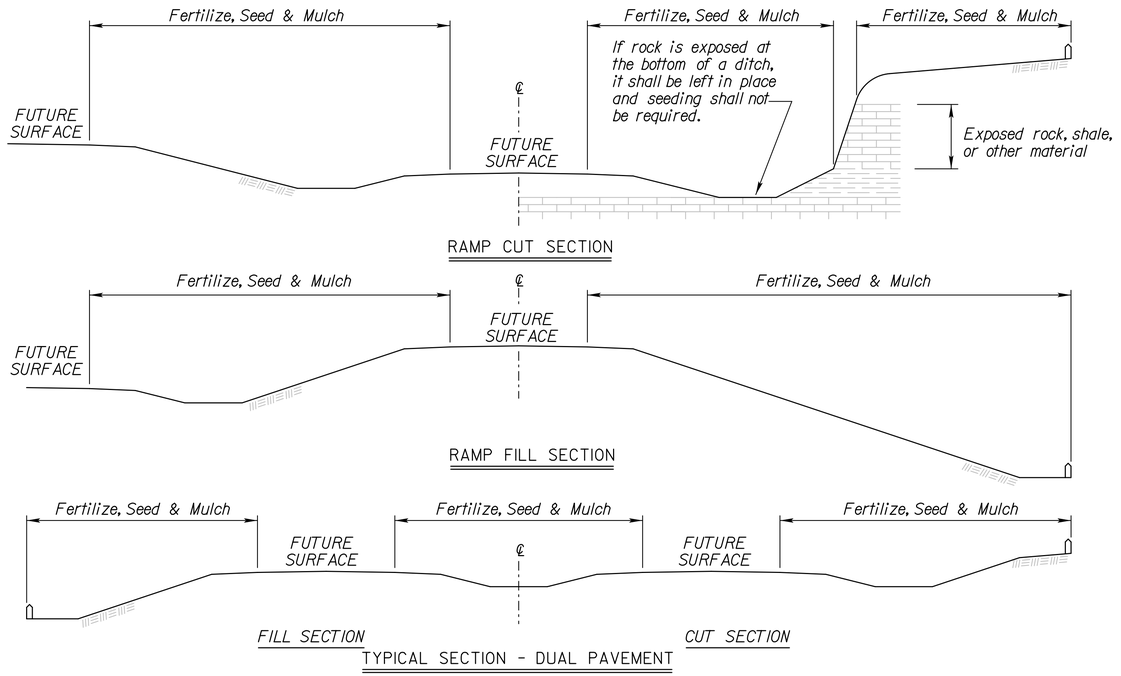
FHWA APPROVAL 5-28-08		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

KDOT Graphics Certified 03-11-2022 Sh. No. 42

KDOT Graphics Certified

Plotted by : Stacy.Swann 11-MAR-2022 11:13
File : KA608301rpq-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	43	85



FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P_2O_5, K_2O listed in Summary of Quantities will be acceptable.

- * - N = Nitrogen Rate of Application
- ** - P_2O_5 = Phosphorous Rate of Application
- *** - K_2O = Potassium Rate of Application

The Contractor will be required to finish areas of excavation, borrow and embankment in accordance with the specifications. Areas that require installation or construction of temporary water pollution control items will be finished in reasonable close conformity to the alignment, grade and cross section shown on the plans or as established by the Engineer.

CLT = Construction Limit Tract. This area is defined by the entire disturbed area of the project that requires seeding and erosion control measures to be placed. Any impervious areas (i.e. pavement, gravel, riprap, etc.) shall not be included in this measurement.

Slope = Defined by the area of the project that requires Class 1 erosion control material to be placed. This area shall be seeded using the Soil Erosion Mix prior to placement of the material. Drilling seed is preferred, however, broadcasting is acceptable if drilling is not possible.

Channel = Defined by the area of the project that requires Class 2 erosion control material to be placed. This area shall be seeded using the Soil Erosion Mix prior to placement of the material. Drilling seed is preferred, however, broadcasting is acceptable if drilling is not possible.

GENERAL NOTES

The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of undisturbed native sod or other desirable vegetation shall be fertilized (limed when required), seeded, and mulched. Soil preparation shall conform to the Standard Specifications.

Temporary seeding shall be done during any time of the year that the soil can be cultivated. After the temporary seeding has been completed on the entire project, permanent seeding shall be done during the normal seeding season.

MULCHING: Mulch shall be spread uniformly over all disturbed areas and punched in the soil, unless otherwise noted on the plans. The rate of application per acre, thickness in place, for the mulching materials is generally as follows:

1¾ - 2¼ Tons per Acre = 1½" loose depth spread uniformly over acre.

Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.
Other vegetative mulches are acceptable only with the Engineer's concurrence.

The above rate is a guide. It will be at the discretion of the Engineer to determine what rate is sufficient for adequate protection of newly seeded areas.

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150		0.43		Temporary Fertilizer (16 - 20 - 0)	64.5	LB
				Temporary Seed (Canada Wildrye)		LB
				Temporary Seed (Grain Oats)		LB
				Temporary Seed (Sterile Wheatgrass)		LB
	169.9		0.43	Soil Erosion Mix	73.1	LB
				Erosion Control (Class 1, Type C)	1349	SQ YD
				Erosion Control (Class 2, Type Y)		SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)		CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Biodegradable Log (9")		LF
				Biodegradable Log (12")		LF
				Biodegradable Log (20")	96	LF
				Filter Sock (12")	354	LF
				Filter Sock (18")	72	LF
				Geotextile (Erosion Control)		SQ YD
				Silt Fence	72	LF
				SWPPP Design †		LS
				SWPPP Inspection †		EACH
				Water Pollution Control Manager †		EACH
900 lbs / acre				Mulch Tacking Slurry		LB
2 tons / acre				Mulching		TON
				Water (Erosion Control) (Set Price)	1	MGAL

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. See Permanent Seeding Summary of Seeding Quantities sheet LA850 for further details.

Geotextile (Erosion Control) shall be removed prior to placement of permanent slope protection.

Regreen and Quick Guard are the approved sterile wheatgrass products.

† If the total disturbed area of the project, not just the seeding area, is 1 acre or more, then these bid items must be included.

***** List size of material.*

The amount of mulch and mulch tacking slurry in the bid quantities is estimated. (Acres of Seeding X 1.5 X 2 Tons/Acre). The estimated quantity includes mulching associated with both temporary and permanent seeding operations. The total mulch and mulch tacking slurry required shall be determined in the field. The bid item for mulching and mulch tacking slurry shall be paid for according to the Standard Specifications.

Quantities for all erosion control items are estimated to give full flexibility for compliance with the NPDES permit. Final quantities will be determined in the field.

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
20	Canada Wildrye	8.6
20	Grain Oats	8.6
20	Sterile Wheatgrass	8.6
0.5	Blue Grama (Lovington)	0.2
4.5	Buffalograss (Treated)	1.9
45	Perennial Ryegrass	19.4
2.6	Prairie Junegrass	1.1
6.3	Side Oats Grama (El Reno)	2.7
45	Tall Fescue (Endophyte Free)	19.4
6	Western Wheat (Barton)	2.6
150	Fertilizer (16-20-0)	•
169.9	Total (lb)	73.1

The Soil Erosion Mix consists of the Shoulder Area of the Permanent Seed Mix used on the project.

The Soil Erosion Mix is to be placed under the Class 1 and/or Class 2 erosion control material.

- Fertilizer quantity for Soil Erosion Mix is shown on Summary chart above.

  The total PLS Rate for Soil Erosion Mix does not include the Fertilizer bid item.

NO.	DATE	REVISIONS	BY	APP'D
3	08/03/20	Added Note	MRD	ML
2	12/01/17	Revised Standard	MRD	SHS
1	06/01/17	Revised Standard	MRD	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

FHWA APPROVAL		1/26/2018	APP'D	Scott H. Shields	
DESIGNED	MRD	DETAILED	MRD	QUANTITIES	CADD
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.	CADD CK.

KDOT Graphics Certified 11-19-2021

Sheet No. 43

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
Plot Location: Landscape
File: la852a.dgn
Plot Date: 26-JAN-2022 15:17

EROSION CONTROL- CLASS I, TYPE C

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
CL				
367+00 to 371+17	Lt			408
367+60 to 371+71	Rt			285
372+07 to 375+00	Lt			378
371+64 to 378+00	Rt			278
TOTAL EROSION CONTROL (CLASS I, TYPE C) = 1349 Sq. Yds				

Std. Base File:
Plotted By: melissa
Plot Location: *Landscape*
File: *la852a-ec.dgn*
Plot Date: 26-JAN-2022 15:17

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

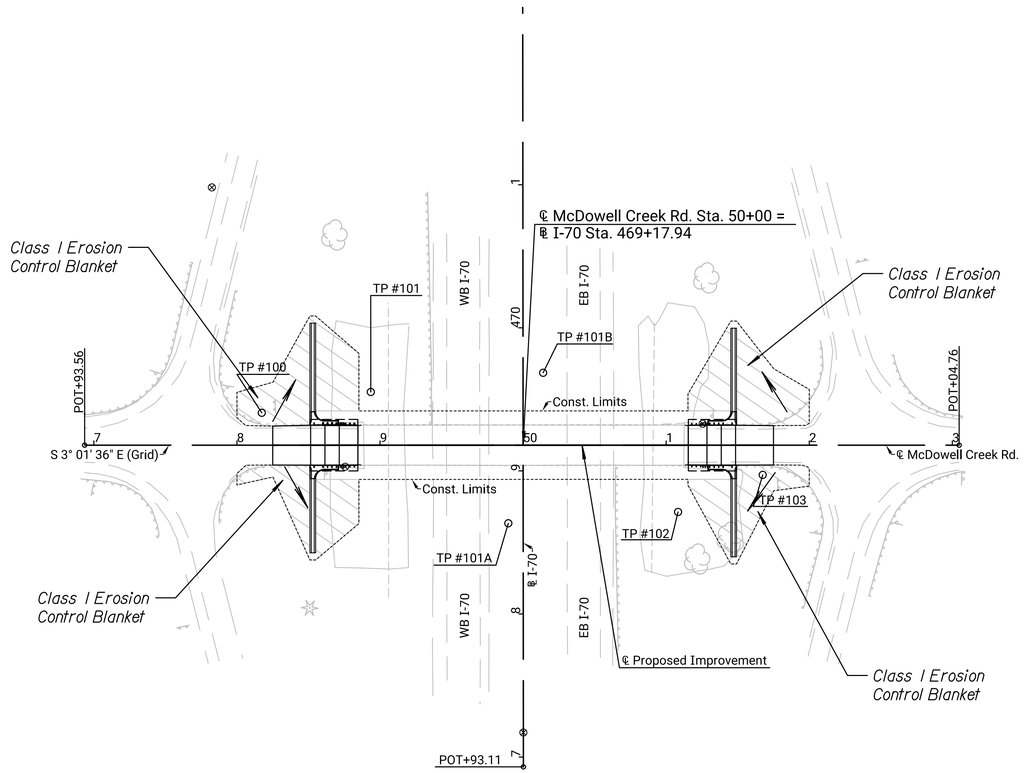
EROSION CONTROL
SEEDING-SODDING

LA852A-EC

FHWA APPROVAL	1/04/2006	APP'D		Scott H. Shields	
DESIGNED	MRM	DETAILED	MRM	QUANTITIES	CADD MRM
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.	CADD CK. SHS

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	45	85

Scale: 1"= 50'



LEGEND

- *Class I Erosion Control*
- *Class 2 Erosion Control*
- *Slope Protection (Riprap Stone)*

KANSAS DEPARTMENT OF TRANSPORTATION

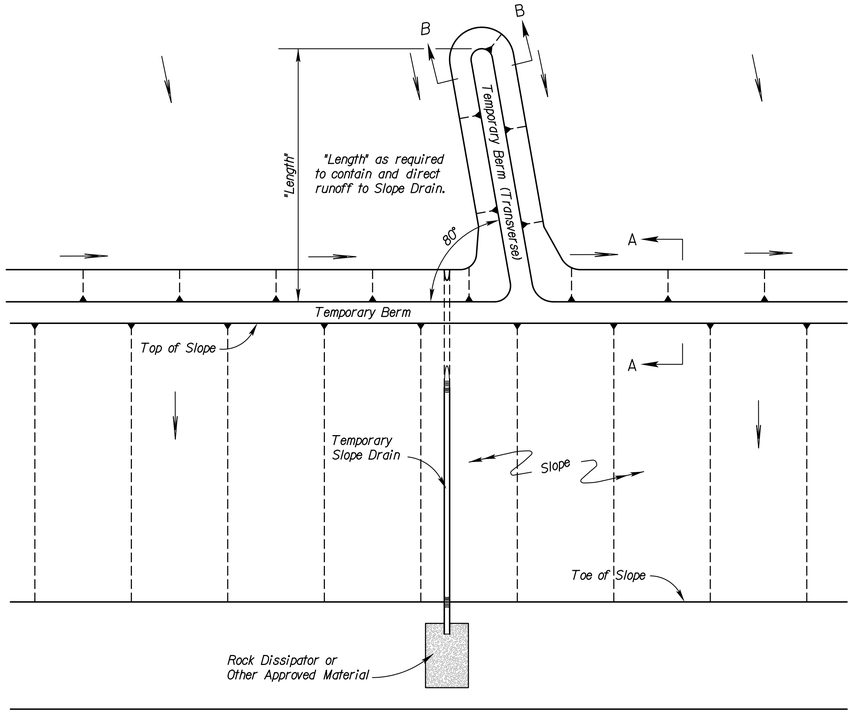
PROPOSED FINAL EROSION CONTROL PLAN STA. 357+00 TO STA. 385+00

KDOT Graphics Certified 01-19-2022 Sh. No. 45

KDOT Graphics Certified

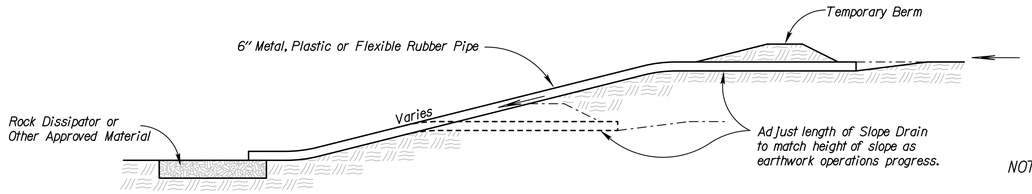
Plotted by : Stacy.Swann 08-FEB-2022 14:39
File : KA608301rec-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	46	85



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

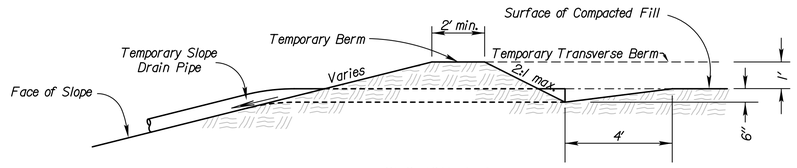
NOTES:

1) Temporary Slope Drain and Temporary Berm may be used on either project foreslopes or project backslopes.

2) Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.

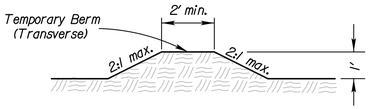
3) Pipe shall be secured in place as approved by Engineer.

4) Temporary Berms under 2,000 feet shall be bid by Set Price.



SECTION A-A

NO SCALE

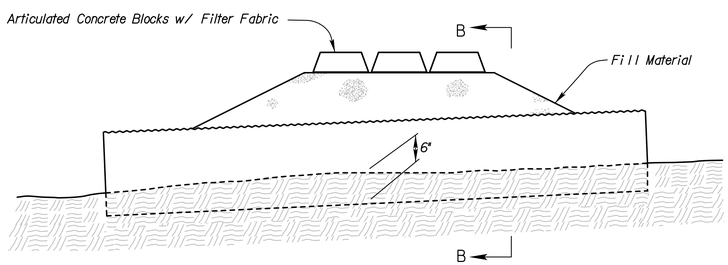


SECTION B-B

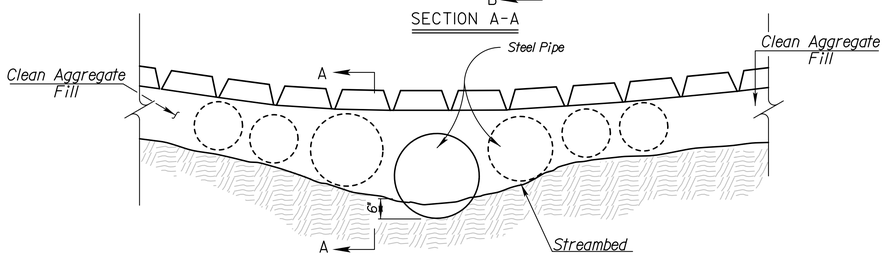
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

NO SCALE



SECTION A-A



SECTION B-B

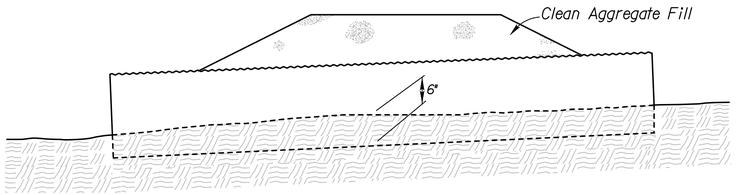
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

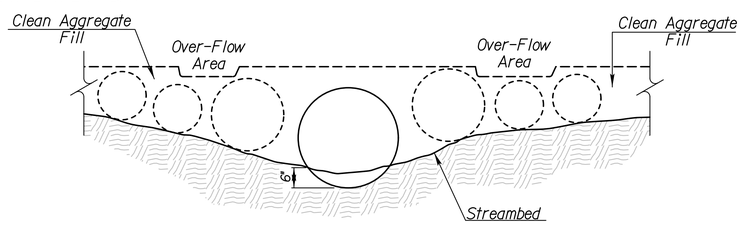
NO SCALE

Pipe size may vary

Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the pipes without overtopping the crossing.

See KDOT Specifications for more information





SECTION B-B

TEMPORARY STREAM CROSSING (AGGREGATE)

NO SCALE

Pipe size may vary

Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the pipes without overtopping the crossing.

See KDOT Specifications for more information

NO.	DATE	REVISIONS	BY	APP'D
3	6/11/13	Revised Standard	MRM	SHS
2	11/01/10	Revised Standard	MRM	SHS
1	10/15/10	Revised Standard	WCL	RDR

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

TEMPORARY SLOPE DRAIN

TEMPORARY STREAM CROSSING (AGGREGATE)

TEMP. STREAM CROSS. (ARTC. CONC. BLOCKS)

LA852B

FHWA APPROVAL	11/08/2010	APP'D	Scott H. Shields
DESIGNED MRM	DETAILED	QUANTITIES	CADD
DESIGN CK. SHS	DETAIL CK.	QUAN.CK.	CADD CK.

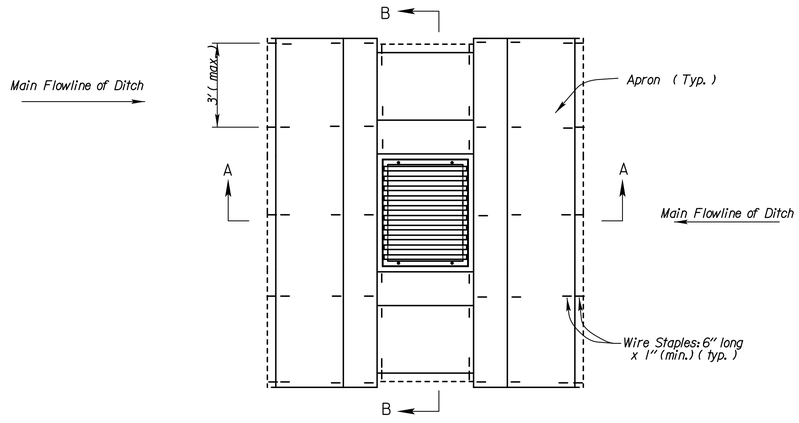
Std. Base File:
Plotted By: melissa | Plot Location: Landscape
File: la852b.dgn
Plot Date: 26-JAN-2022 15:18

KDOT Graphics Certified 11-17-2021

Sheet No. 46

KDOT Graphics Certified

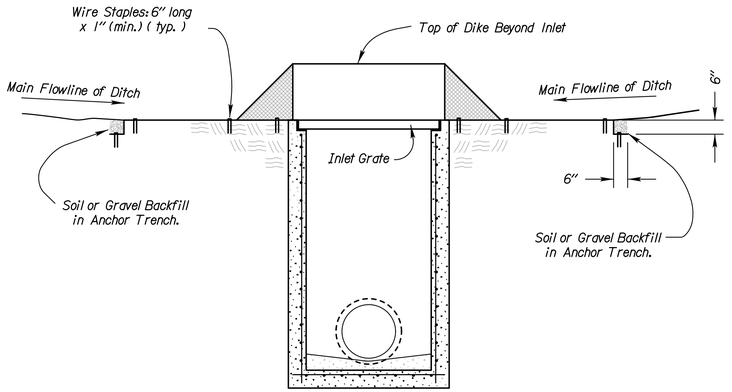
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	47	85



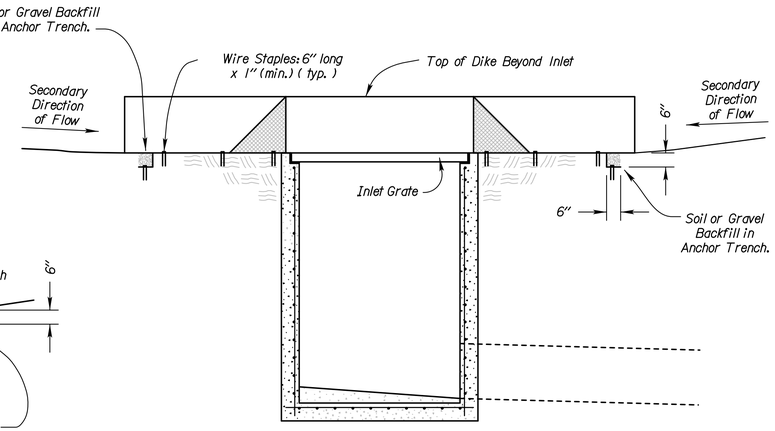
PLAN

TEMPORARY INLET SEDIMENT BARRIER
(TRIANGULAR SILT DIKE METHOD)

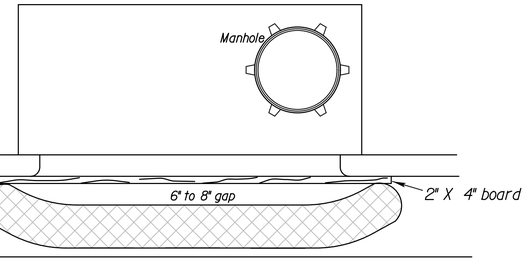
NO SCALE



SECTION A - A



SECTION B - B

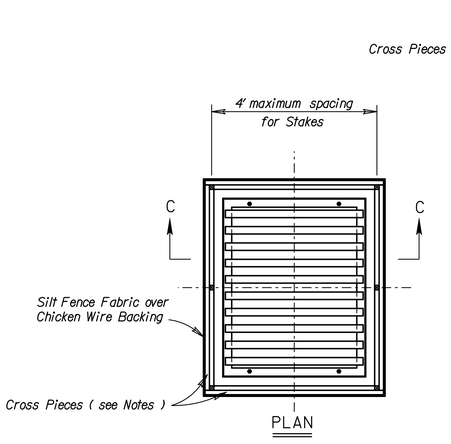


Bags = synthetic net (3mm mesh) or burlap bags

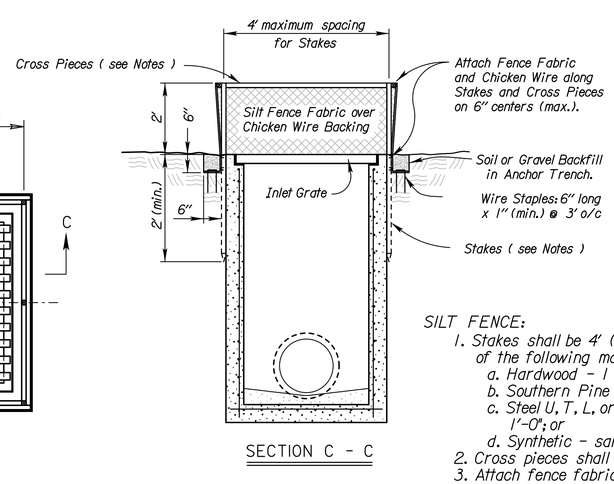
Rock = approximately 1" to 2" diameter

CURB INLET PROTECTION

1. If multiple gravel bags are required, place them in such a way that no gaps are evident.
2. Height of bags (8" minimum diameter) must not be above top of curb.
3. Alternative products may be used other than gravel bags such as the "Gutter Buddy". Products must be approved by the Engineer.
4. Curb inlet protection will be measured and paid for as Filter Sock.



PLAN



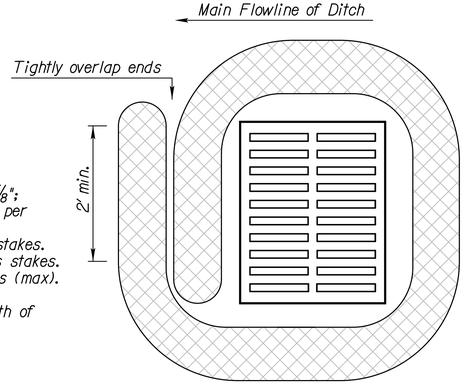
SECTION C - C

TEMPORARY INLET SEDIMENT BARRIER
(SILT FENCE METHOD)

NO SCALE

SILT FENCE:

1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 3/16" x 1 3/16";
   b. Southern Pine (No. 2) - 2 5/8" x 2 5/8";
   c. Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Cross pieces shall be of same material as stakes.
3. Attach fence fabric securely on 6" centers (max).
4. Use of high flow material is acceptable.
5. Refer to plan sheets to estimate the length of silt fence required.



Drop inlet use
1'-6" TO 1'-8" diameter log

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

Note: 25% of log shall be keyed into ground during installation.

Stake every 4'

Material Requirements
Use 100% shredded mulch or other non-compost biodegradable material as fill for logs.
No compost or fines.
No hay or straw.
Do not use material which prohibits water infiltration.
Log Mesh: Use mesh with 1/4" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

NO.	DATE	REVISIONS	BY	APP'D
3	9/26/19	Changed Direction of Main Flowline of Ditch Arrow	MRD	SHS
2	3/10/15	Revised Standard	RA	SHS
1	6/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

TEMP. INLET SEDIMENT BARRIER (SILT FENCE)
TEMP. INLET SEDIMENT BARRIER (T.S.D.)
CURB INLET PROTECTION
DROP INLET PROTECTION

LA852C

FHWA APPROVAL	3/10/2015	APP'D	Scott H. Shields
DESIGNED RA	DETAILED RA	QUANTITIES	CADD
DESIGN CK. SHS	DETAIL CK. SHS	QUAN.CK.	CADD CK.

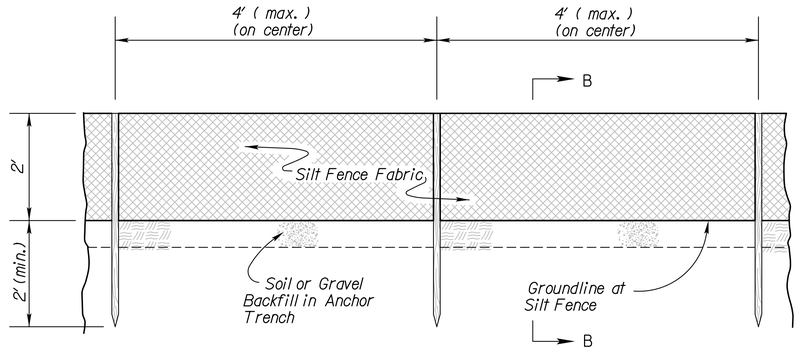
KDOT Graphics Certified 11-17-2021

Sheet No. 47

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
File: la852c.dgn
Plot Date: 26-JAN-2022 15:18
Plot Location: Landscape

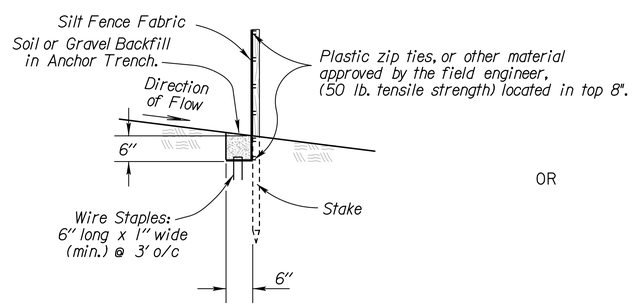
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	48	85



TYPICAL ELEVATION

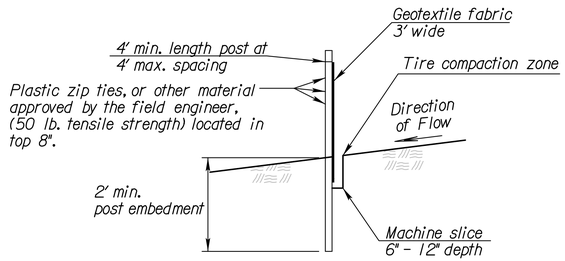
SILT FENCE BARRIER

NO SCALE

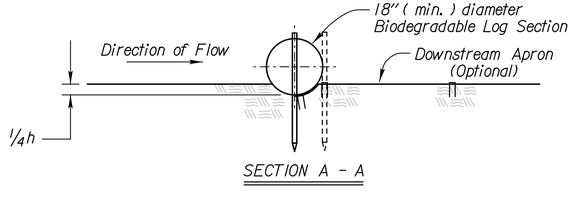


SECTION B-B

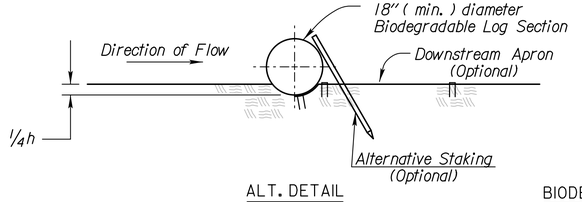
OR



SECTION B-B

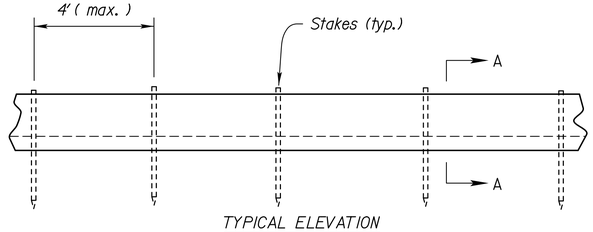


SECTION A - A



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

INSTALLATION NOTES

SILT FENCE:

1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 3/16" x 1 3/16";
   b. Southern Pine (No. 2) - 2 5/8" x 2 5/8";
   c. Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Attach fence fabric with 3 zip ties within the top 8" of the fence
   Alternate attachment methods may be approved by the Engineer on a performance basis.
3. Use of high flow material is acceptable.
4. Refer to plan sheets to estimate the length of silt fence required.

BIODEGRADABLE LOG OR FILTER SOCK

1. Place biodegradable logs or filter sock tightly together minimum overlap of 18".
2. Wood stakes shall be 2" x 2" (nom.).
3. Refer to plan sheets to estimate length of biodegradable log and filter sock required.
4. Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.
5. Length of stakes should be 2 times the height of the log at a minimum with minimum ground embedment equal to the height of the log / sock.

Biodegradable Log or Filter Sock Slope Interruptions

		PRODUCT		
		9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
Slope Gradient	≤4H:1V	40	60	80
	3H:1V	30	45	60

Deviations should be approved by the Field Engineer.

	BIODEGRADABLE LOG MATERIAL	
	LOW FLOW	HIGH FLOW
9"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber
12"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber
18"-20"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber

GENERAL NOTES

1) Slope interruptions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
2) The maximum length of the slope interruptions shall not exceed 250 feet, and the barrier ends need to be staggered.
3) Interruptions damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor at no additional cost to KDOT.
4) Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

NO.	DATE	REVISIONS	BY	APP'D
3	6/28/16	Revised Standard	RA	SHS
2	3/01/15	Revised Standard	RA	SHS
1	6/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE

LA852D

FHWA APPROVAL		9/14/2016	APP'D	Scott H. Shields	
DESIGNED	SHS	DETAILED RA	QUANTITIES	CADD	
DESIGN CK.	SHS	DETAIL CK.	QUAN.CK.	CADD CK.	

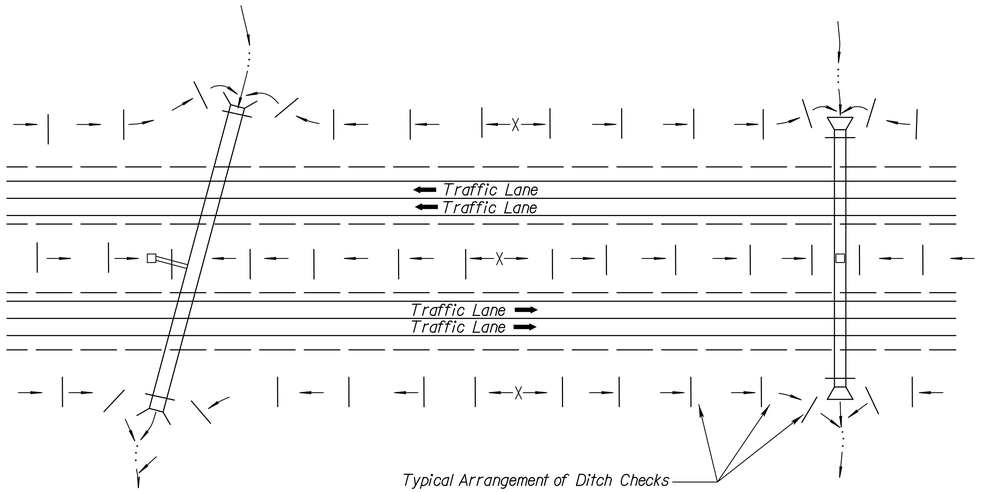
KDOT Graphics Certified 11-17-2021

Sheet No. 48

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
File: la852d.dgn
Plot Date: 26-JAN-2022 15:18
Plot Location: Landscape

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	49	85



TYPICAL DITCH CHECK LAYOUT PLAN

NO SCALE

20" BIOLOG CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	*125*
2.0	*60*
3.0	*40*
4.0	*30*
5.0	*25*
NOTE: Use this spacing for all except Rock Ditch Checks.	

18" FILTER SOCK CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	*110*
2.0	*55*
3.0	*35*
4.0	*25*
5.0	*20*
NOTE: Use this spacing for all except Rock Ditch Checks.	

GENERAL NOTES

1) *The choice of ditch check methods is at the option of the Contractor.*

2) *Use only rock checks in situations where the ditch slope is 6 percent or greater.*

2) *Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.*

Std. Base File:	
Plotted By: melissa	Plot Location: *Landscape*
File: *la852e.dgn*	
Plot Date: 26-JAN-2022 15:18	

NO.	DATE	REVISIONS	BY	APP'D
3	8/10/16	Revised Standard	RAA	SHS
2	6/28/16	Revised Standard	RAA	SHS
1	6/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

DITCH CHECKS

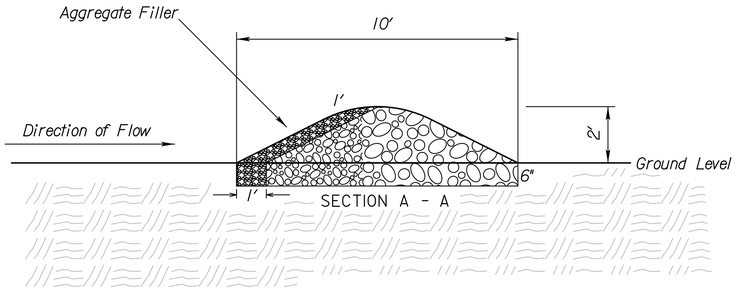
LA852E

FHWA APPROVAL		9/14/2016		APP'D		Scott H. Shields	
DESIGNED	SHS	DETAILED	RAA	QUANTITIES		CADD	RAA
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.		CADD CK.	SHS

KDOT Graphics Certified 11-17-2021

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	50	85



TYPICAL ELEVATION

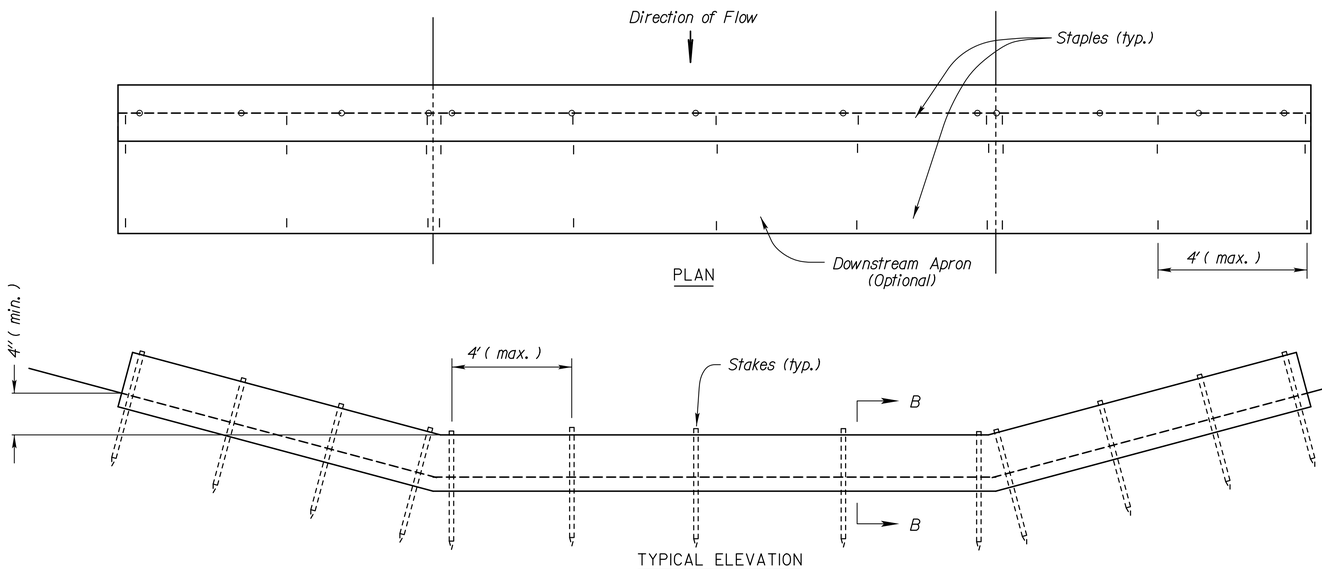
ROCK DITCH CHECK

NO SCALE

TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	*SPACING INTERVAL (FEET)*
5.0	*60*
6.0	*50*
7.0	*43*
8.0	*36*
9.0	*33*
10.0	*29*
NOTE: Use this spacing for Rock Ditch Checks only.	

ROCK DITCH CHECK NOTES

1. *Rock shall be clean aggregate, D50-6" and aggregate filler.*
2. *Place rock in such manner that water will flow over, not around ditch check.*
3. *Do not use rock ditch checks in clear zone.*
4. *Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch shall be excavated to the dimensions of the Rock Ditch Check and to a minimum depth of 6" (150mm). After placement of the rock, backfill and compact any over-excavated soil to ditch grade. This work shall be subsidiary to the bid item Temporary Ditch Check (Rock).*
5. *Aggregate excavated on site may be used as an alternate to the 6" rock, if approved by the Engineer.*
6. *The Engineer may approve the use of larger aggregates for the downstream portion of the check when conditions warrant their use.*
7. *When the use of larger rock is approved, D50-6" rock will be placed between the larger aggregate and the aggregate filler.*
8. *Aggregate filler will be placed on the upstream face of the ditch check. Aggregate filler will comply with Filter Course Type I, Division 1114.*

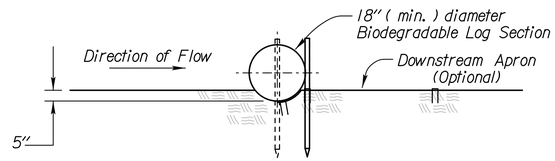


TYPICAL ELEVATION

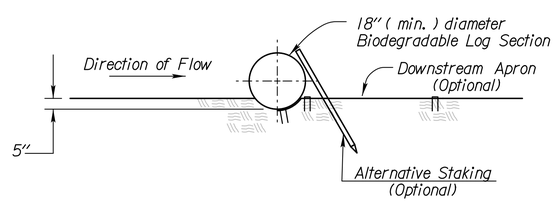
BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE



SECTION B - B



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG DITCH CHECK NOTES

1. *Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.*
2. *Overlap sections a minimum of 18".*
3. *Stakes shall be wood or steel according to Section 2114 of the Standard Specifications. Length of stakes shall be a minimum of 2 x the diameter of the log.*
4. *Use Erosion Control (Class 1) (Type C) as the downstream apron when required.*
5. *A downstream apron is required when directed by the Engineer. Apron material will be paid at the contract unit price.*
6. *Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.*

NO.	DATE	REVISIONS	BY	APP'D
3	11/19/20	Revised Standard	MRD	ML
2	8/10/16	Revised Standard	RAA	SHS
1	10/21/15	Revised Standard	RAA	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL
ROCK DITCH CHECKS
BIODEGRADABLE LOG DITCH CHECKS

LA852G

FHWA APPROVAL		11/19/2020	APP'D	Mervin Lare	
DESIGNED	ML	DETAILED	DK	QUANTITIES	CADD RAA
DESIGN CK.	ML	DETAIL CK.	ML	QUAN.CK.	CADD CK. RAA

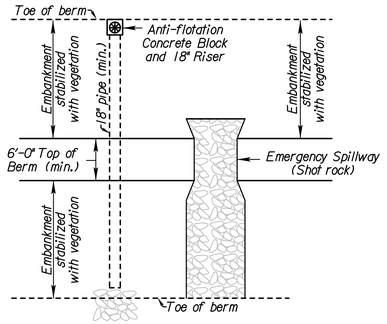
KDOT Graphics Certified 11-17-2021

Sheet No. 50

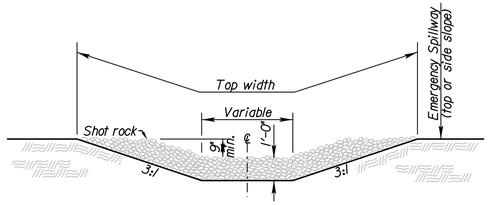
Std. Base File: *la852g.dgn* | Plot Location: *Landscape*
Plotted By: *melissa*
File: *la852g.dgn*
Plot Date: 26-JAN-2022 15:18

KDOT Graphics Certified

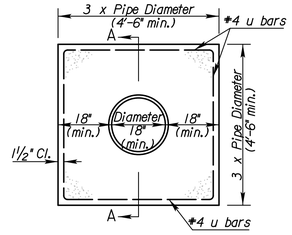
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	51	85



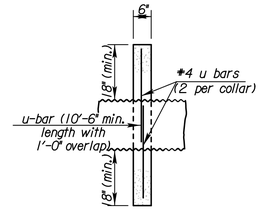
SEDIMENT STORAGE BASIN (PLAN)



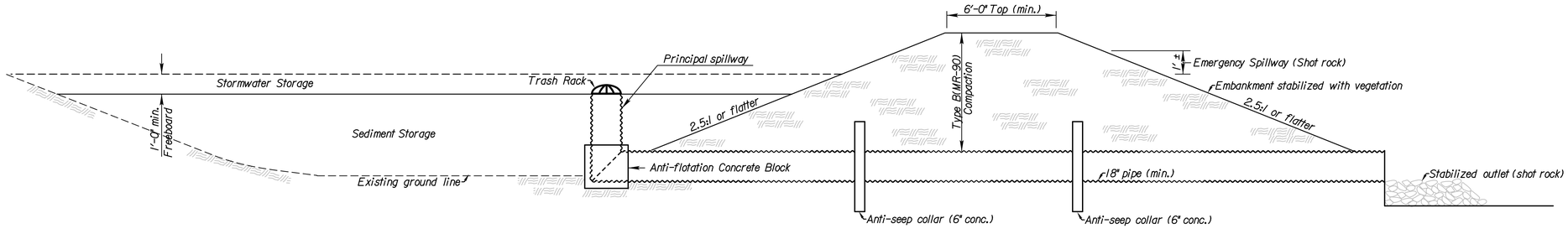
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



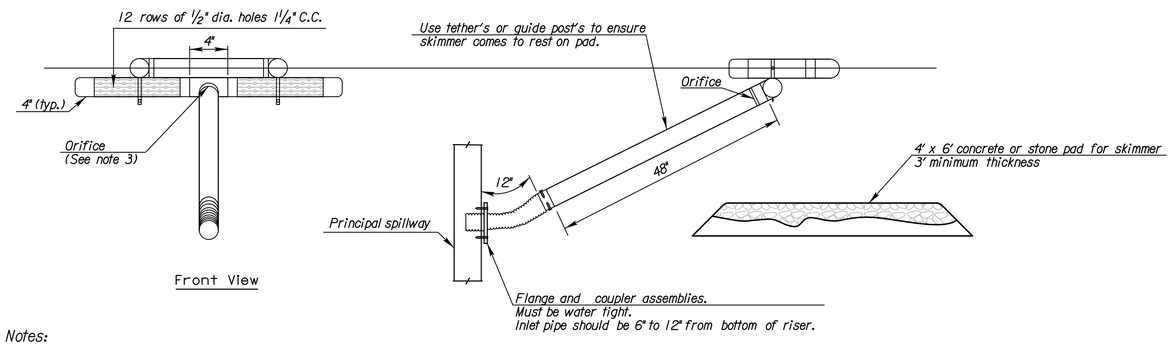
SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

1) Temporary Sediment Basins shall be constructed at locations as directed by the Engineer or as approved in the SWPPP Schedule. All work and materials necessary, including but not limited to, the fill material, compaction, drainage pipes, aggregates and all other incidentals necessary to construct the basin, shall be paid as "Temporary Sediment Basin".

2) Lengths and top dimensions shall be determined in the field by the Engineer.

3) Skimmer dewatering device required and must be used reguardless the size of the drainage area.



Notes:

1. *All P.V.C. pipes are to be schedule 40.*
2. *HDPE flexible drain pipes is to be attached to the pond outlet structure with water-tight connections.*
3. *The orifice shall be sized of to provide drawdown time to 2 to 5 days and approved by the engineer.*
4. *Other skimmer designs maybe used that dewaters from the surface at a controlled rate. The design must be approved by the engineer.*

SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

NO.	DATE	REVISIONS	BY	APP'D
3				
2	9/3/13	Added Skimmer Dewatering Device	MRM	SHS
1	7/17/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

SEDIMENT STORAGE BASIN

LA852H

FHWA APPROVAL	09/24/2013	APP'D	Scott H. Shields		
DESIGNED	BB	DETAILED	BB	QUANTITIES	CADD BB
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.	CADD CK. SHS

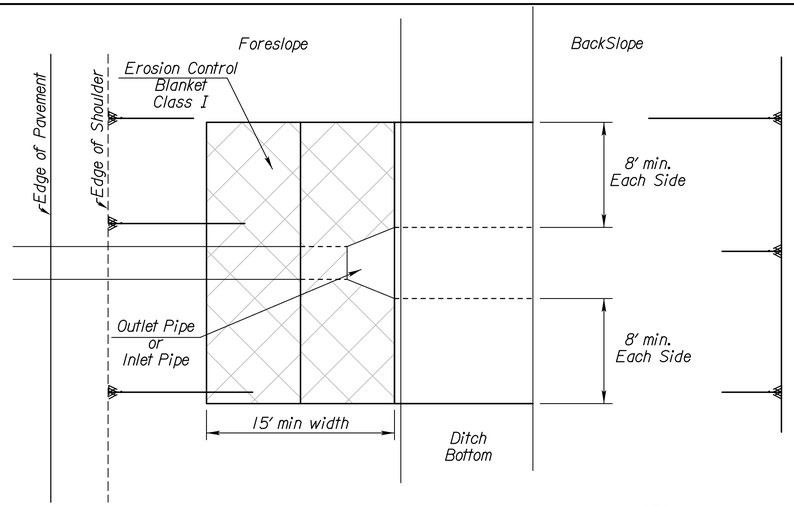
KDOT Graphics Certified 11-17-2021

Sheet No. 51

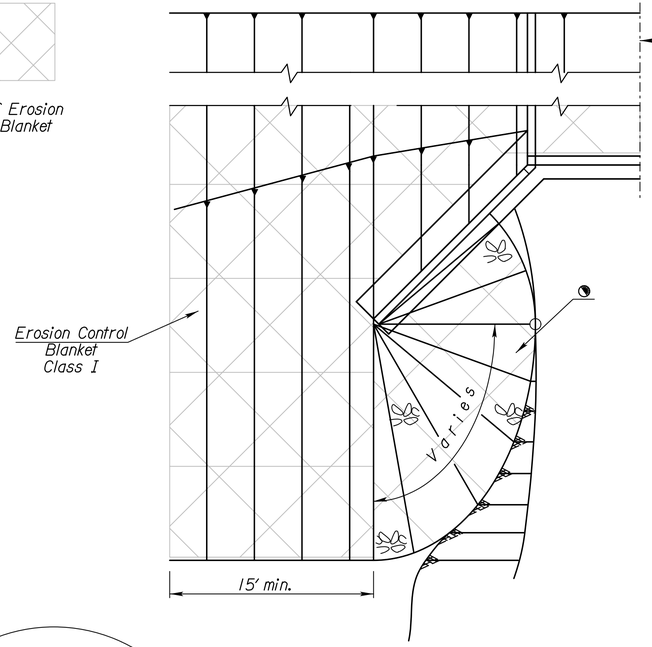
KDOT Graphics Certified

Std. Base File:
Plotted By: melissa | Plot Location: Landscape
File: la852h.dgn
Plot Date: 26-JAN-2022 15:18

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	52	85



Limits of Erosion Control Blanket



PARTIAL PLAN BOX CULVERT

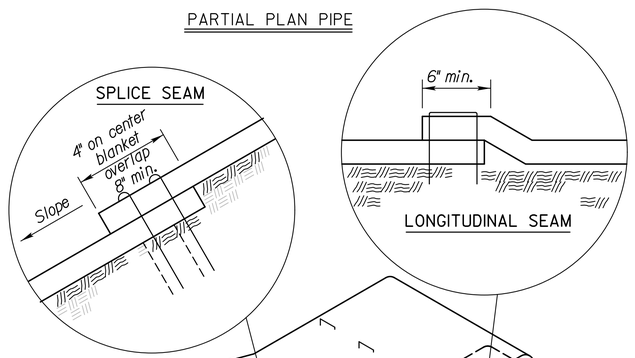
INSTALLATION DETAILS FOR EROSION CONTROL CLASS I

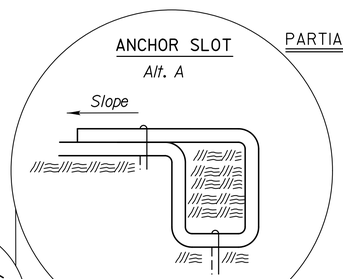
Erosion Control Blankets shall be laid loosely in the direction of the slope, beginning at the bottom of the slope. In order for blanket to be in contact with the soil, lay blanket loosely, avoiding stretching.

1. *ANCHOR SLOTS: The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.*
2. *LONGITUDINAL SEAMS: The edges of the blanket should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.*
3. *SPLICE SEAM: When splices are necessary, overlap end a minimum of 8 inches in direction of water flow. Stagger splice seams.*
4. *TERMINAL FOLD: The bottom edge of the blanket shall be turned under a minimum of 4 inches, then anchored in place with anchors 9 inches apart.*
5. *TYPICAL ANCHORS: Anchor design shall be as recommended by the manufacturer.*
6. *STAPLE CHECK: †Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.*

◔ *Erosion Control Class I may be omitted if the area is immediately covered by permanent slope protection (where directed by the plans).*

PARTIAL PLAN PIPE

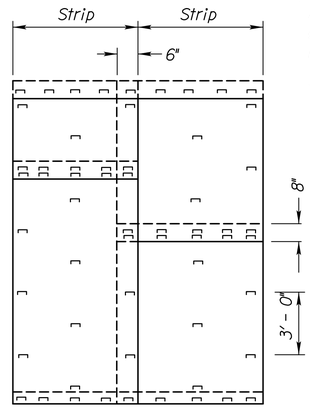




ISOMETRIC VIEW

NOTE:
Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

Single post ring and shank staple is acceptable.



PLAN VIEW - ANCHORING DIAGRAM

NO.	DATE	REVISIONS	BY	APP'D
4	3/01/15	Revised Standard	RAA	SHS
3	2/23/15	Revised Standard	RAA	SHS
2	9/15/14	Revised Standard	MRM	SHS
1	9/10/07	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS I
SLOPE PROTECTION

LA855

FHWA APPROVAL	3/10/2015	APP'D	Scott H. Shields		
DESIGNED	RAA	DETAILED	RAA	QUANTITIES	CADD RAA
DESIGN CK.		DETAIL CK.		QUAN.CK.	CADD CK. RAA

KDOT Graphics Certified 11-17-2021

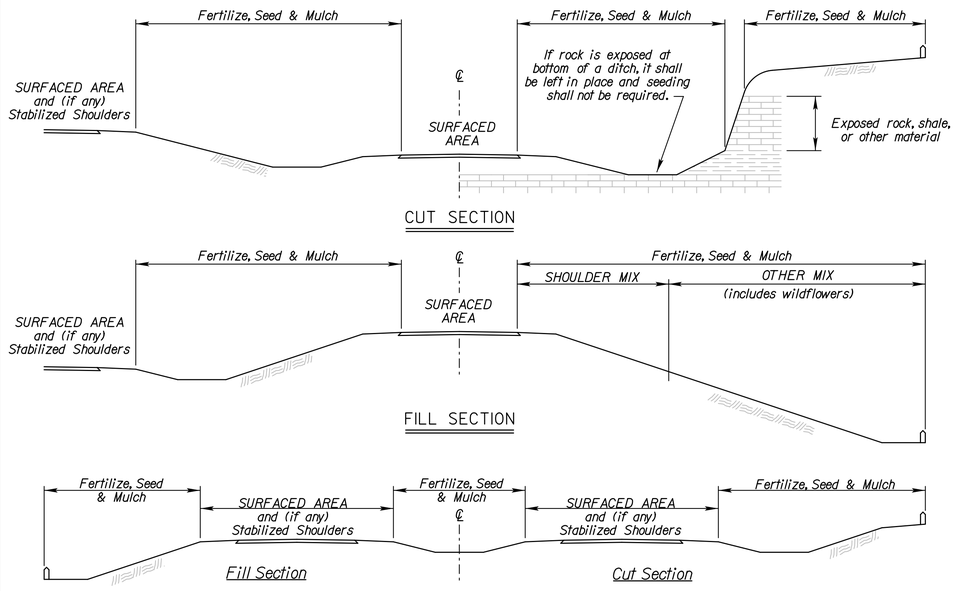
Sheet No. 52

KDOT Graphics Certified

Std. Base File: la855.dgn | Plot Location: Landscape
Plotted By: melissa
File: la855.dgn
Plot Date: 26-JAN-2022 15:18

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31KA-6083-01	2022	53	85

FOR INFORMATION ONLY



TYPICAL SECTION - DUAL PAVEMENT

GRASS & WILDFLOWER SEEDING SEASONS

COOL SEASON GRASSES February 15 thru April 20 August 15 thru September 30	WARM SEASON GRASSES & WILDFLOWERS November 15 thru June 1
SPECIES	SPECIES
Bluegrasses	Bermuda Grass
Brome Grasses	Big Bluestem
Canada Wildrye	Blue Grama
Fescues	Buffalo Grass
Prairie Junegrass	Indiangrass
Ryegrasses	Little Bluestem
Sterile Wheatgrass	Sand Bluestem
Tall Dropseed	Sand Dropseed
Western Wheatgrass	Sand Lovegrass
	Side Oats Grama
	Switchgrass
	Wildflower Mixes

When the area to be seeded is 1 acre or more, if Cool Season grasses are mixed with Warm Season grasses, seed the area during the Warm Season.

When the area to be seeded is less than 1 acre, seed the area any time of the year.

SODDING SEASONS

COOL SEASON GRASSES March 1 thru April 15 September 1 thru November 15	WARM SEASON GRASSES May 15 thru September 1
SPECIES	SPECIES
Bluegrass Sod	Buffalo Grass Sod
Fescue Sod	

If the soil is workable, the Engineer may allow placement of sod between November 15 and March 1. If sod is placed during this time, maintain the sod until 20 days after the beginning of the spring sodding season.

GENERAL NOTES

The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of undisturbed native sod or other desirable vegetation shall be fertilized (limed when required), seeded and mulched. Soil preparation shall conform to the Standard Specifications except as noted below.

All borrow areas shown on the plans are to be fertilized, seeded, and mulched. However, operation in borrow areas where crops are growing may be omitted when requested by the owner.

If temporary cover has provided stable slopes with no erosion, seed the permanent grasses into the existing cover. If there has been erosion that requires repair prior to seeding, then it may be necessary to regrade the area, resulting in bare ground.

FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P_2O_5, K_2O listed in Summary of Seeding Quantities will be acceptable.

MULCHING: Mulch shall be spread uniformly over all disturbed areas and punched in the soil, unless otherwise noted on the plans. The rate of application per acre, thickness in place, for the mulching material is generally as follows:

1¾ - 2¼ Tons per Acre = 1½" loose depth spread uniformly over acre.

Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

Other vegetative mulches are acceptable only with the Engineer's concurrence.

The above rate is a guide. It will be at the discretion of the Engineer to determine what rate is sufficient for adequate protection of newly seeded areas.

Entire project will be blanketed.
See LA852A for Soil Erosion Mix,
replacing the need for Permanent
Seeding operations.

NATIVE WILDFLOWER MIX 1

PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	
0.3	Common Milkweed	
0.3	Black Eyed Susan	
0.5	Blanket Flower	
0.5	False Sunflower	
0.5	Lance-Leaf Coreopsis	
0.2	Maximillian Sunflower	
0.1	New England Aster	
0.2	Pinnate Prairie Coneflower	
0.2	Plains Coreopsis	
0.3	Purple Coneflower	
0.3	Upright Prairie Coneflower	
0.3	Dames Rocket	
0.3	Lemon Mint	
0.2	Pitcher Sage	
0.2	Wild Bergamot	
1.0	Illinois Bundleflower	
0.2	Common Evening Primrose	
0.1	Hoary Verbena	
0.8	Purple Prairie Clover	
0.3	Roundhead Lespedeza	
3.0	Showy Partridge Pea	
0.2	White Prairie Clover	
10.3	Total (lb)	

NATIVE WILDFLOWER MIX 2

PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	
0.3	Black Eyed Susan	
0.5	Black Sampson Coneflower	
1.0	Blanket Flower	
0.2	Maximillian Sunflower	
0.2	Plains Coreopsis	
0.2	Upright Prairie Coneflower	
0.2	Western Yarrow	
0.3	Lemon Mint	
0.4	Pitcher Sage	
1.5	Illinois Bundleflower	
0.2	Common Evening Primrose	
1.0	Blue Wild Indigo	
0.4	Leadplant	
0.4	Purple Prairie Clover	
0.3	White Prairie Clover	
7.4	Total (lb)	

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed 1/8" - 1/4". Place the wildflower seed in a separate seed box and drill (cover) seed 1/16" maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE				ACRES				BID ITEM	QUANTITY	UNIT
SHLDR	OTHER			SHLDR	OTHER					
								Mulching *		

SHLDR = Seeded with the Shoulder Mix. Typically 15 feet for 2-lane roads and 30 feet for 4-lane roads. Includes outside roadsides, turfed portions of shoulders, and turfed portion of the median.

OTHER = Seeded with the "Other" Mix. Designated as all other turf areas, except the Shoulder. Usually includes a Native Wildflower Mix.

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. All disturbed areas shall be seeded, fertilized and mulched at the listed rate per acre. The acres are estimated.

Refer to the Standard Specifications, Division 900, Section 904 'Seeding', and Section 907 'Sodding', for the seeding and sodding seasons.

** See LA852A for mulching quantity. The quantity of mulch is estimated (Acres of Seeding X 1.5 X 2 Tons/Acre). The total mulch required shall be determined in the field. The bid item for mulching shall be paid for according to the Standard Specifications.*

FOR INFORMATION ONLY

NO.	DATE	REVISIONS	BY	APP'D
2	11/25/20	Updated Seeding / Sodding Periods Charts	MRD	ML
1	08/03/20	Revised Standard	MRD	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING
SUMMARY OF SEEDING QUANTITIES

LA850

FHWA APPROVAL	05/06/2019	APP'D	Mervin Lare		
DESIGNED	MRD	DETAILED	MRD	QUANTITIES	CADD
DESIGN CK.		DETAIL CK.		QUAN.CK.	CADD CK.

KDOT Graphics Certified 11-19-2021

Sheet No. 53

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
File: la850.dgn
Plot Date: 26-JAN-2022 15:18
Plot Location: Landscape

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	54	85

SYMBOL KEY

- REMOVE SIGN
- REMOVE POST
- REMOVE FOOTING
- REMOVE SIGN & POST
- REMOVE POST & FOOTING
- REMOVE SIGN, POST, & FOOTING
- MOUNT ON WOOD POST IN CONCRETE FOOTING
- MOUNT ON WOOD POST IN SOIL
- MOUNT ON STEEL BEAM BREAKAWAY POST
- MOUNT ON STEEL U-POST
- MOUNT ON PSST POST
- MOUNT ON EXISTING POST
- MOUNT ON VERTICAL SUPPORT
- SHOULDER MOUNTED INSTALLATION
- OFFSET MOUNTED INSTALLATION
- EXISTING SIGN
- EXISTING SIGN TO BE OVERLAID
- SIGN IS NOT PART OF PROJECT
- TYPE 'A' DELINEATOR (RIGID)
- TYPE 'A' DELINEATOR (RIGID) (BK-BK)
- TYPE 'B' DELINEATOR (RIGID)
- TYPE 'A' DELINEATOR (FLEXIBLE)
- TYPE 'A' DELINEATOR (FLEXIBLE) (BK-BK)
- TYPE 'B' DELINEATOR (FLEXIBLE)
- TYPE 2 OBJECT MARKER
- TYPE 3 OBJECT MARKER
- TYPE 3 OBJECT MARKER (BK-BK)

GENERAL NOTES

In order to expedite the completion of the project for traffic service, the signing and delineator work shall be sequenced with any other contract work such that the phases of construction may proceed and be completed at the same time.

New signs erected on the project which are in conflict with existing signing are to be completely covered until the existing signs are removed or the new signing is applicable. The existing signs that are being replaced, removed, or do not follow the current MUTCD signing standards are to be removed when the project is completed or as determined by the Engineer.

The Contractor shall exercise caution at all times when installing sign supports in and around areas where utilities exist, either underground or overhead, and will be held responsible for any damage incurred to the system. The installation of sign supports shall include the excavation, drilling, or driving the support footing and the erection of the sign support. The contractor shall exercise caution when working around any existing signs that are to remain and will be held responsible for any damage to the signs, supports, or footings. The Contractor shall exercise care when working around shrubbery while removing or installing signs or sign supports.

An existing sign post installation shall be plumb and the compaction of the backfill soil shall comply with the specifications after the removal and resetting of a sign, the removal and replacement of a sign, or the installation of a new sign.

The Contractor shall provide mounting bolts that are of a length that does not extend more than a nominal 1 inch beyond the sign post. The Contractor shall not make any field modifications to the mounting bolt prior to or after the sign is installed.

Specific service (LOGO) signs that are to be removed shall have the business logo plaques removed and transported to location determined by KDOT, at which time the plaques become the property of KDOT. The Contractor will be assessed a replacement cost for any damage to a business logo plaque prior to the plaque becoming the property of KDOT.

The materials and fabrication for signing and delineation work shall conform to the Standard Specifications for State Road and Bridge Construction (2015 edition) and Special Provisions.

INDEX OF SHEETS

NO.	DATE	REVISIONS	BY	APP'D
2	10/01/19	Changed symbols, notes, & index	D.D.G.	E.W.N.
1	7/23/10	Changed General Notes and Spec Book Date	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGNING SYMBOL KEY
GENERAL NOTES
AND INDEX

TE402 7/1/03

FHWA APPROVAL			10/01/2019	APP'D	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

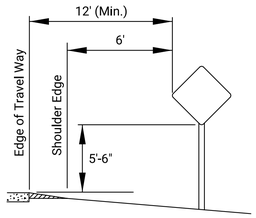
Sh. No. 54

KDOT Graphics Certified

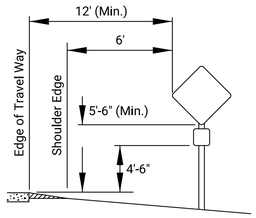
Plotted : 10-FEB-2022 17:45

Drawn By : TCCusick
File : te402.dgn

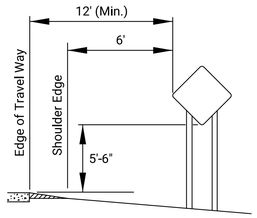
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	55	85



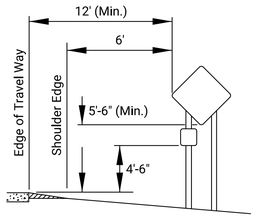
ONE POST



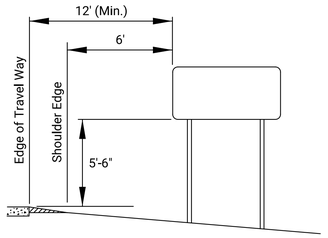
ONE POST WITH SUPPLEMENTAL SIGN



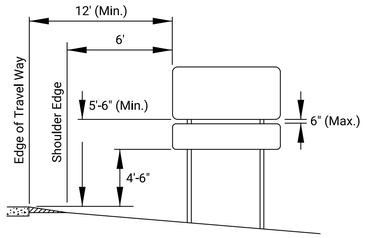
TWO POSTS



TWO POSTS WITH SUPPLEMENTAL SIGN

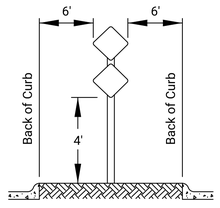


MULTIPLE POSTS

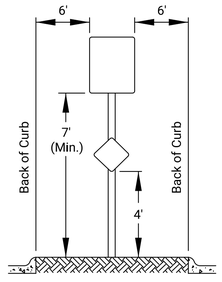


MULTIPLE POSTS WITH SUPPLEMENTAL SIGN

CONVENTIONAL HIGHWAY AND SIDE ROADS

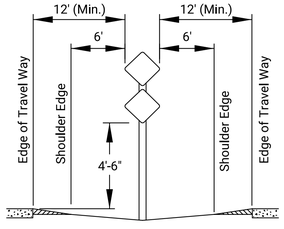


ONE OR TWO OM1-3

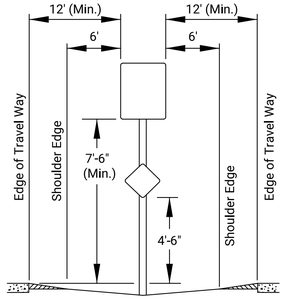


PRIMARY SIGN WITH OM1-3

RAISED



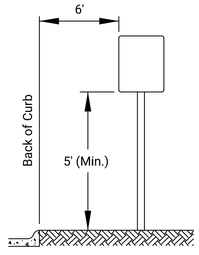
ONE OR TWO OM1-3



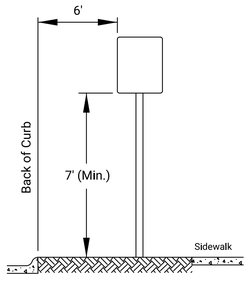
PRIMARY SIGN WITH OM1-3

DEPRESSED

MEDIANS AND ISLANDS

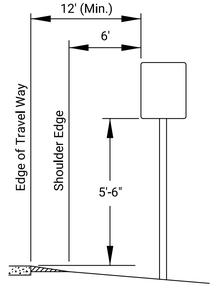


NO PARKING OR SIDEWALK



PARKING OR SIDEWALK

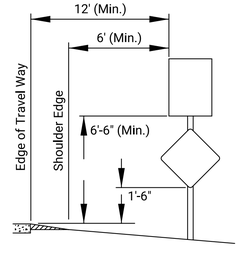
CURB



TYPICAL

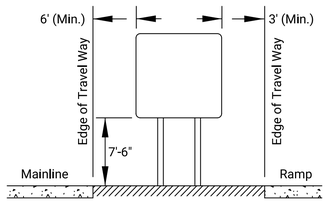
NO CURB

URBAN ROADWAYS

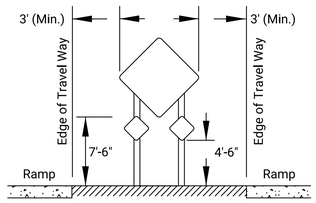


TYPICAL

ADOPT A HIGHWAY

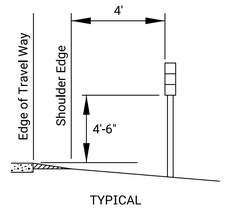


MAINLINE/RAMP



RAMP/RAMP

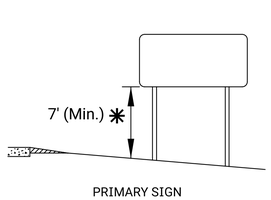
HIGHWAY GORES



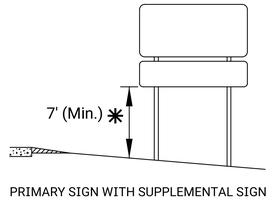
TYPICAL

Reference Marker Post: 2 Lb/Ft "U" Post

REFERENCE MARKERS



PRIMARY SIGN



PRIMARY SIGN WITH SUPPLEMENTAL SIGN

✱NOTE: Measured from the nearest point between the sign and the groundline.

GROUND CLEARANCE FOR STEEL BEAM POSTS

NOTES

The "Edge of Travel Way" is the edge line or the edge of the driving lane.

The outer edge of the sign shall not extend beyond the right of way line.

A minimum lateral clearance of 6' from pavement edge may be used where lateral offsets are limited.

In business, commercial, or residential districts where with limited lateral offsets, a minimum lateral clearance of 2' with a 7'-6" minimum mounting height may be used.

When signs are behind guard rail, the near edge of the sign shall not extend beyond the back side of the guard rail and the nearest sign post shall be a minimum of 5' from the face of the guard rail. Shoulder mounted shall not be located between 100' in advance of and 50' beyond the nose of the guard rail.

When the median or island is too narrow for the typical lateral placement, the sign may be placed a minimum of 2' from the back of the curb. In no case shall the sign edge extend beyond the back edge of the curb.

The gore sign shall be installed in the paved gore area. The edges of the gore sign shall not extend beyond the shoulder edge. The minimum distance from the centerline of the posts to the back of the paved gore area is 2'.

Signs may be moved laterally or longitudinally if it will improve visibility of the sign or other signs or if it will protect the sign more. The maximum allowable longitudinal adjustment is 100', with the exception of the reference marker which is 50'.

The minimum spacing between signs, excluding reference markers is 100'.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

MOUNTING HEIGHT & LATERAL OFFSET FOR CONVENTIONAL HIGHWAYS, SIDE ROADS, MEDIANS, ISLANDS, GORES, AND URBAN ROADWAYS

TE407 10/01/19

FHWA APPROVAL			10/01/2019	APP'D	Eric W. Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

Sh. No. 55

KDOT Graphics Certified

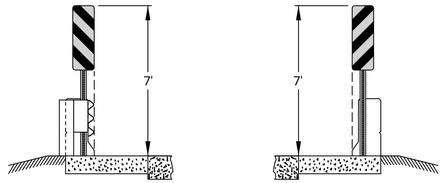
Plotted : 10-FEB-2022 17:45

Drawn By : TCCusick
File : te407.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	56	85

WITH GUARDRAIL WITHOUT GUARDRAIL

SHOULDER WIDTH 6 FEET OR GREATER (TYPE 2 OBJECT MARKER)

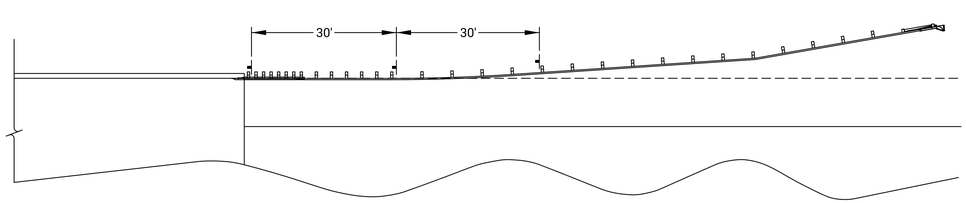


WITH GUARDRAIL WITHOUT GUARDRAIL

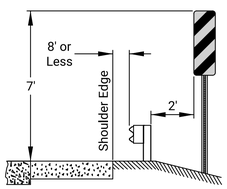
SHOULDER WIDTH LESS THAN 6 FEET (TYPE 3 OBJECT MARKER)

NOTE:
The longitudinal location of the object markers from the structure end shall be a maximum spacing of 42".

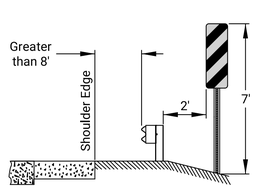
END OF STRUCTURE



LONGITUDINAL PLACEMENT

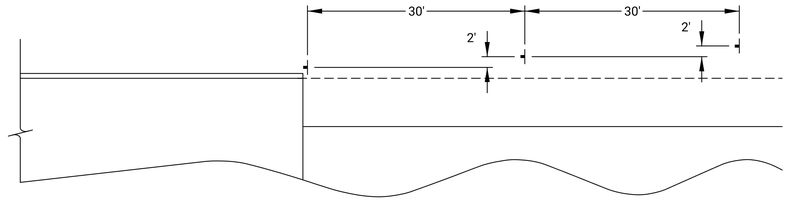


GUARDRAIL 8' OR LESS FROM SHOULDER EDGE



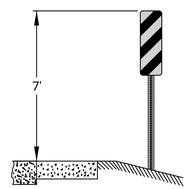
GUARDRAIL GREATER THAN 8' FROM SHOULDER EDGE

STRUCTURE APPROACH GUARDRAIL WITHOUT MARKERS



LONGITUDINAL PLACEMENT

NOTE:
The lateral offset is measured from the centerline of the object markers.



STRUCTURE APPROACH WITHOUT GUARDRAIL

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR
OBJECT MARKERS (TYPE 2 & 3)
FOR STRUCTURES WITH PARAPETS

TE415 10/01/19

FHWA APPROVAL			10/01/2019	APP'D	Eric W. Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

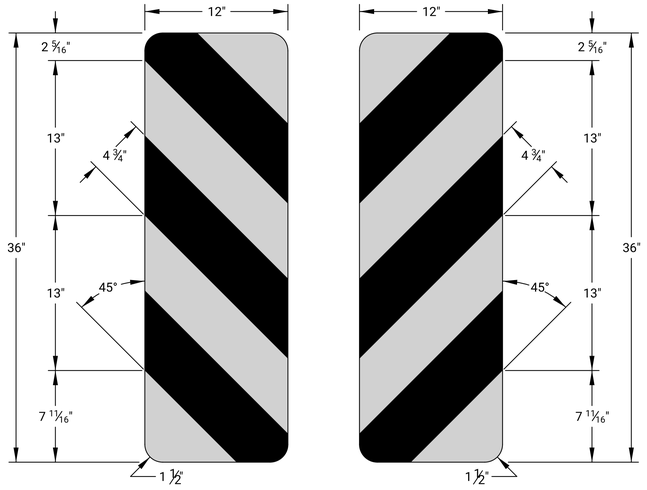
Sh. No. 56

KDOT Graphics Certified

Plotted : 10-FEB-2022 17:45

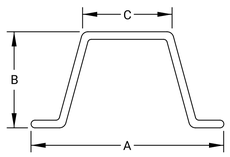
Drawn By : TCCusick
File : te415.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	57	85



OM3-L

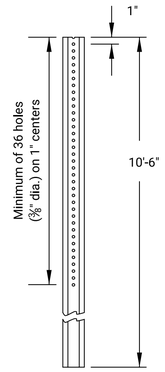
OM3-R



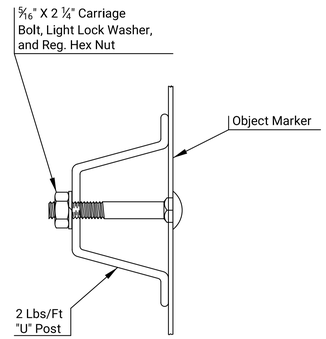
DIMENSIONS	
A	3 1/8
B	1 17/32
C	1 1/4

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS



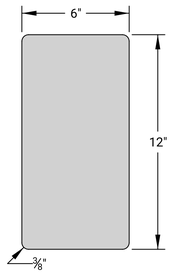
MOUNTING DETAILS

COLORS:
Yellow Background (Reflective)
Black Stripes (Non-reflective)

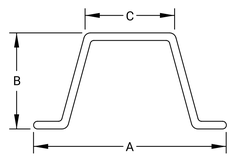
TYPE 3 OBJECT MARKER

GENERAL NOTE:
See flat sheet sign blank standard sheets for the 6" x 12" and 12" x 36" sign blank details.

The object markers shall be covered with Type XI High Intensity yellow retroreflective sheeting.



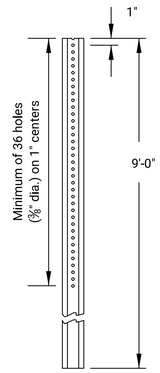
OM2



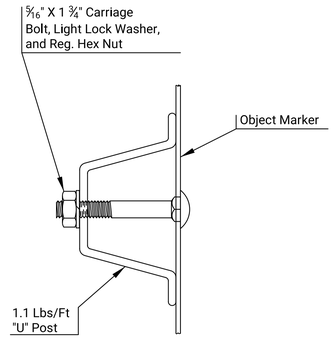
DIMENSIONS	
A	2 1/16
B	7/8
C	1 3/16

(Dimensions are nominal)

DELINEATOR POST
(1.1 lb/ft "U" Post)



PUNCHING DETAILS



MOUNTING DETAILS

COLOR:
Yellow Background (Reflective)

TYPE 2 OBJECT MARKER

All dimensions are in inches unless otherwise noted.
See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS
FOR OBJECT MARKERS
TYPE 2 AND TYPE 3

TE416 10/01/19

FHWA APPROVAL			10/01/2019	APP'D	Eric W. Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

Sh. No. 57

KDOT Graphics Certified

Plotted : 10-FEB-2022 17:45
Drawn By : TCCusick
File : te416.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	58	85

Scale: 1" = 50'

Drawn By : TCCusick
File : KA608301psp-01.dgn

Plotted : 10-FEB-2022 17:45

KANSAS DEPARTMENT OF TRANSPORTATION

PERMAMENT SIGNING PLAN

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 02-10-2022

Sh. No. 58

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	59	85

Scale: 1"= 50'

Drawn By : TCCusick
File : KA608301srm-01.dgn

Plotted : 10-FEB-2022 17:45

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN REMOVAL

APP'D							
DESIGNED	XXX	DETAILED	XXX	DESIGN CK.	XXX	DETAIL CK.	XXX

KDOT Graphics Certified 02-10-2022

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	60	85

QUANTITIES SHEET

SIGNS, POSTS, & FOOTINGS TO BE INSTALLED ON PROJECT

PLAN SHEET NUMBER	PLAN STATION NUMBER	CENTERLINE LOCATION / INSTALL POSITION	SIGN DESIGNATION	SIGN SIZE	SIGN LAYOUT SHEET NUMBER	TYPE OF SIGN FABRICATION			4" X 6" POSTS			3I2.25 ALUMINUM BEAM	U-POSTS		GALVANIZED STEEL BEAM POSTS						PERFORATED SQUARE STEEL TUBE (PSST) POSTS										CONCRETE FOOTINGS					SIGN STRUCTURE TYPE							VERTICAL SUPPORT MOUNT	MOUNT ABOVE GUIDE SIGN DESIGNATION
									WOOD		STEEL				W6x9		W10x12		W10x22		1 3/4"			2"			2 1/4"		2 1/2"		WOOD POST	STEEL BEAM POST											
																															A36		A572 (ALT)										
						FLAT SHEET	REINFORCED PANEL	OVERLAY	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LB PER FT	3 LB PER FT	A36	A572 (ALT)	A36	A572 (ALT)	A36	A572 (ALT)	POST	FOOTING	BRACKET	POST	FOOTING	BRACKET	POST	FOOTING	POST	FOOTING	18" DIA.	24" DIA.	30" DIA.	24" DIA.	30" DIA.	OVERHEAD	CANTILEVER	BUTTERFLY	BRIDGE MOUNT ATTACHMENT	MAST ARM	SINGLE TAPERED TUBE		
XX	48+60	L	M3-2	24" x 12"		X			1																				1													
			M1-1	24" x 24"		X																																					
			M1-4	24" x 24"		X																																					
			M5-1L	21" x 15"		X																																					
XX	51+30	L	M3-4	24" x 12"		X			1																				1													
			M1-1	24" x 24"		X																																					
			M1-4	24" x 24"		X																																					
			M5-1L	21" x 15"		X																																					

CENTERLINE LOCATION
L or LL - Left of Centerline
R or RR - Right of Centerline
C - On the Centerline

INSTALL POSITION
S - Shoulder Mount
O - Offset Mount
G - Gore Mount
M - Median Mount
OH - Overhead Mount

NOTE: See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS	BY	APP'D
2	10/01/19	Added Tapered Tube. Removed Couplers.	D.D.G.	E.W.N.
1	7/23/10	Added Coupler and Coupler/Footing Quantity	D.D.G.	D.B.

FHWA APPROVAL		10/01/2019	APP'D	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.S.	QUANTITIES	TRACED B.B.
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.	TRACE CK.

TE430

7/1/03

KDOT Graphics Certified 02-09-2022

Sh. No. 60

KDOT Graphics Certified

Plotted : 10-FEB-2022 17:45

Drawn By : TCCusick
File : te430.dgn

QUANTITIES SHEET

DELINEATORS AND OBJECT MARKERS

			RIGID DELINEATORS												FLEXIBLE DELINEATORS												OBJECT MARKERS				
			TYPE 'A'								TYPE 'B'				TYPE 'A'								TYPE 'B'				TYPE 2	TYPE 3			
			WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW		WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW			LEFT	RIGHT	CENTER	BACK TO BACK
BEGINNING STATION	ENDING STATION	LOCATION DESCRIPTION	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	'U' POST	'U' POST	'U' POST	'U' POST	'U' POST
48+20	48+83																											1	1		
51+20	51+75																											1	1		

Plotted : 10-FEB-2022 17:45

Drawn By : TCCusick
File : te436.dgn

NO.	DATE	REVISIONS	BY	APP'D
1	10/01/19	Added delineator & object marker types	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

QUANTITIES SHEET
DELINEATORS & OBJECT MARKERS

TE436 7/1/03

FHWA APPROVAL 10/01/2019	APP'D Steven A. Buckley		
DESIGNED D.D.G.	DETAILED K.D.S.	QUANTITIES	TRACED
DESIGN CK. S.A.B.	DETAIL CK. D.D.G.	QUAN. CK.	TRACE CK.

KDOT Graphics Certified

KDOT Graphics Certified 02-09-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	62	85

SUMMARY OF QUANTITIES

SIGNS

TYPE	NUMBER	SQUARE FEET
FLAT SHEET	8	24.38
REINFORCED PANEL		
OVERLAY		

DELINEATORS

TYPE	FLEXIBLE DELINEATOR		RIGID DELINEATOR	
	TYPE I ANCHOR	TYPE III ANCHOR	"U" POST	BRACKET MOUNT
TYPE 'A' WHITE				
TYPE 'A' YELLOW				
TYPE 'B' WHITE				
TYPE 'B' YELLOW				
TYPE 'A' WHITE (BACK TO BACK)				
TYPE 'A' YELLOW (BACK TO BACK)				

OBJECT MARKERS

TYPE		NUMBER
TYPE 2 ("U" POST)		
TYPE 3 ("U" POST)		4
INFORMATION ONLY	OM3-L	2
	OM3-R	2
	OM3-C	
TYPE 3 ("U" POST) (BACK TO BACK)		

POSTS AND ALUMINUM BEAMS

	4" x 6" POST			3I2.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
NUMBER	2															
FEET	32'															

POST FOOTINGS AND BRACKETS

	CONCRETE FOOTING (DIA.)					PERFORATED SQUARE STEEL					
						TUBE FOOTING				BRACKET	
	WOOD	A36 STEEL		A572 STEEL (ALT)							
	18"	24"	30"	24"	30"	1-3/4"	2"	2-1/4"	2-1/2"	1-3/4"	2"
NUMBER	2										
FEET	6										

BASE PLATES AND STUB POSTS

	W6x9		W10x12		W10x22	
BREAKAWAY BASES	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)
BASE PLATE (TOP)						
STUB POST WITH BASE PLATE						
NON-BREAKAWAY BASES						
BASE PLATE						

REMOVALS

TYPE	NUMBER
SIGNS	8
POSTS	2
FOOTINGS	2
SIGN STRUCTURES	

NUMBER & LENGTHS OF POSTS & ALUMINUM BEAMS (INFORMATION ONLY)

LENGTH OF POST OR BEAM	4" x 6" POST			3I2.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
2.1' - 4'																
4.1' - 6'																
6.1' - 8'																
8.1' - 10'																
10.1' - 12'																
12.1' - 14'																
14.1' - 16'	2															
16.1' - 18'																
18.1' - 20'																
20.1' - 22'																
22.1' - 24'																
24.1' - 26'																
26.1' - 28'																
28.1' - 30'																
30.1' - 32'																

SIGN STRUCTURES

TYPE	NEW	MODIFIED	REMOVE AND RESET	RESET
OVERHEAD STRUCTURE				
CANTILEVER STRUCTURE				
BUTTERFLY STRUCTURE				
BRIDGE MOUNT ATTACHMENT				
MAST ARM SIGN SUPPORT				
SINGLE TAPERED TUBE SIGN SUPPORT				

NO.	DATE	REVISIONS	BY	APP'D
2	10/01/19	Revised Tables	D.D.G.	E.W.N.
1	7/23/10	Revised Tables	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES
FOR
INSTALLATIONS AND REMOVALS

TE439 7/1/03

FHWA APPROVAL		10/01/2019	APP'D	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.	TRACE CK.

KDOT Graphics Certified 02-09-2022

Sh. No. 62

Plotted : 10-FEB-2022 17:45
Drawn By : TCCusick
File : te439.dgn

KDOT Graphics Certified

RECAPITULATION OF SIGNING & DELINEATION BID ITEMS

BID ITEMS	APPROXIMATE QUANTITIES		UNITS
SIGN (FLAT SHEET) (HIGH PERFORMANCE)	24.38		SQUARE FOOT
SIGN (REINFORCED PANEL) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN (OVERLAY) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)	32		LINEAR FOOT
SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)			LINEAR FOOT
SIGN POST (2 LB/FT "U" STEEL)			LINEAR FOOT
SIGN POST (3 LB/FT "U" STEEL)			LINEAR FOOT
SIGN POST (1-3/4" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2-1/4" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2-1/2" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (4" X 6" STRUCTURAL STEEL)			LINEAR FOOT
SIGN POST (3 I 2.25 ALUMINUM)			LINEAR FOOT
	A36	A572(ALT)	
SIGN POST (W6X9 STEEL BEAM)			LINEAR FOOT
SIGN POST (W10X12 STEEL BEAM)			LINEAR FOOT
SIGN POST (W10X22 STEEL BEAM)			LINEAR FOOT
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W6X9)			EACH
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W10X12)			EACH
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W10X22)			EACH
SIGN POST BREAKAWAY BASE PLATE (W6X9)			EACH
SIGN POST BREAKAWAY BASE PLATE (W10X12)			EACH
SIGN POST BREAKAWAY BASE PLATE (W10X22)			EACH
SIGN POST FOOTING (24" Dia. CONCRETE)(STEEL BEAM POST)			LINEAR FOOT
SIGN POST FOOTING (30" Dia. CONCRETE)(STEEL BEAM POST)			LINEAR FOOT
SIGN POST FOOTING (18" Dia. CONCRETE)(WOOD POST)	6		LINEAR FOOT
SIGN POST FOOTING (1-3/4" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2-1/4" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2-1/2" PERFORATED SQUARE STEEL TUBE)			EACH
SIGNING OBJECT MARKER (TYPE 2)			EACH
SIGNING OBJECT MARKER (TYPE 3)	4		EACH
SIGNING DELINEATOR (TYPE A)(WHITE RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE A)(WHITE FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(WHITE FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW FLEXIBLE)(TYPE 3 ANCHOR)			EACH

BID ITEMS	APPROXIMATE QUANTITIES	UNITS

Note:
The contract bid for steel beam posts, stub posts, base plates, and footings will be based on A36 Grade steel quantities. When furnishing the A572 Grade alternate steel, the payment will be based on the equivalent A36 steel unit prices in the contract.

NO.	DATE	REVISIONS	BY	APP'D
2	10/01/19	Removed PSST coupler and changed the tables	D.D.G.	E.W.N.
1	7/23/10	Changed Bid Items as per Spec Book (2007)	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION
RECAPITULATION OF
SIGNING & DELINEATION
BID ITEMS

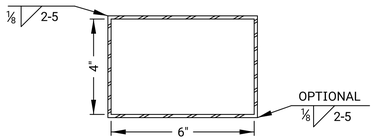
TE450 7/1/03

FHWA APPROVAL 10/01/2019	APP'D Steven A. Buckley		
DESIGNED D.D.G.	DETAILED K.D.S.	QUANTITIES	TRACED
DESIGN CK. S.A.B.	DETAIL CK. D.D.G.	QUAN. CK.	TRACE CK.

Plotted : 10-FEB-2022 17:45
Drawn By : TCCusick
File : te450.dgn

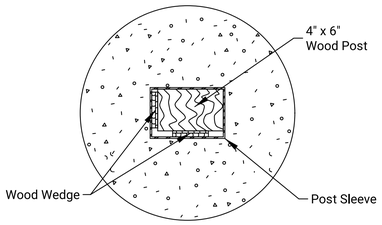
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	64	85

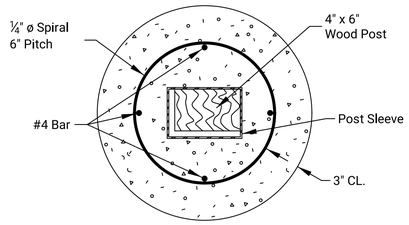


NOTE: Dimensions are to inside of post sleeve.

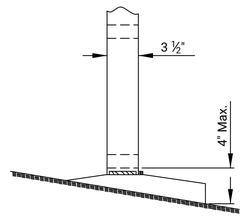
POST SLEEVE



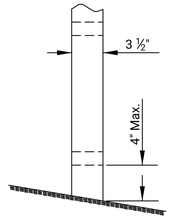
SECTION A-A



SECTION B-B



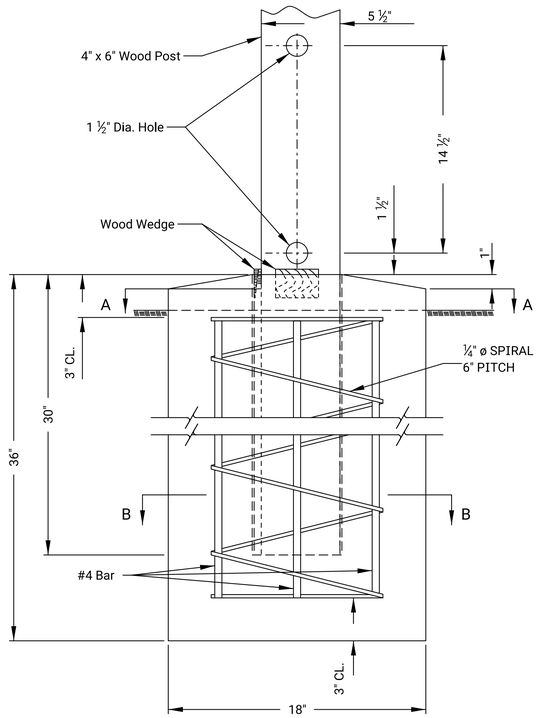
FRONT ELEVATION
CONCRETE FOOTING



FRONT ELEVATION
SOIL

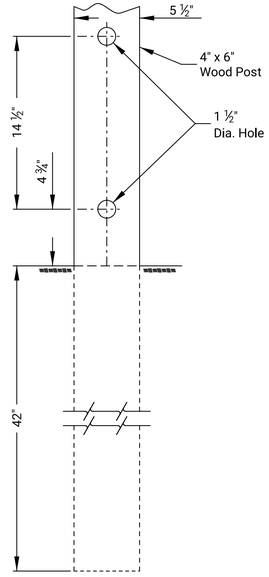
NOTE TO THE ENGINEER:
The intent of the "AASHTO Roadside Design Guide" and these plans is to have a 4" or less projection above the finished ground line after impact.

BREAKAWAY CLEARANCE



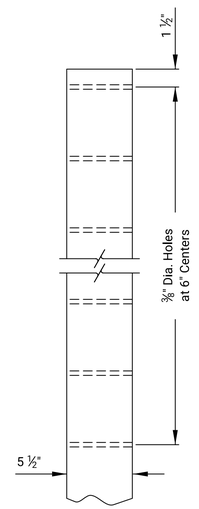
SIDE ELEVATION

WOOD POST IN CONCRETE FOOTING



SIDE ELEVATION

WOOD POST IN SOIL



SIGN POST

SIGN MOUNTING HOLES

GENERAL NOTES

The post sleeve shall be formed from 10 gauge sheet steel to meet the requirements of ASTM A653 and zinc coated to meet the requirements of coating designation A123. If galvanized sheet steel is used, no other galvanization is required. It is permissible to close the bottom of the sleeve with a metal plate. Basis of acceptance shall be visual inspection of the finished sleeve and determination of zinc thickness by magnetic gage.

All sign mounting holes in the wood posts shall be drilled prior to treating.

Breakaway holes, field drilled sign mounting holes, and field cuts shall be treated in accordance with the preservative treatment specifications.

Prior to sealing the opening between the wood post and the top of the concrete footing, secure the post by placing 3" wide by 2" long wood wedges into the opening on two adjacent sides of the post. The wedges are be flush with up to a maximum of ⅜" sticking up above the top of the footing.

Commercial grade concrete may be substituted for sign support footings.

All dimensions in inches unless otherwise noted.

NO.	DATE	REVISIONS	BY	APP'D
1	10/01/19	Change details and note	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR WOOD POSTS

TE460 7/1/03

FHWA APPROVAL			10/01/2019	APP'D	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

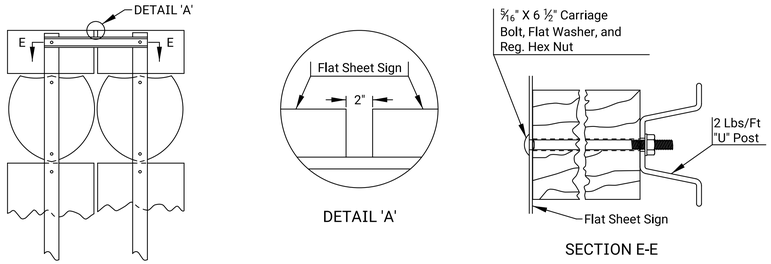
Sh. No. 64

KDOT Graphics Certified

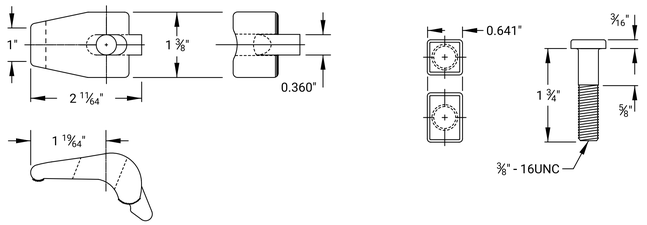
Drawn By : TCCusick
File : te460.dgn

Plotted : 10-FEB-2022 17:45

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	65	85



ROUTE MARKER ASSEMBLIES ATTACHMENT



ALUMINUM POST CLIP AND POST CLIP BOLT

NOTES:

The top of the post shall not extend above the top of the sign.

When signs are mounted back to back, the signs shall be mounted at their prescribed height. In general installations, the bottom holes of the signs should be aligned. In order to prevent having to drill holes in the signs or posts, the sign on the back should be raised and positioned such that the holes are aligned. When a sign is mounted on the back of the R1-1 (Stop) sign, that sign is to be centered vertically on the R1-1 sign. When a sign is mounted on the back of the R1-2 (Yield) sign, the top holes of the signs should be aligned.

The primary sign and supplemental sign are to be mounted at their prescribed height, but under no circumstances shall the signs overlap each other. If the primary sign cannot be mounted without overlapping, then it shall be raised above the supplemental sign.

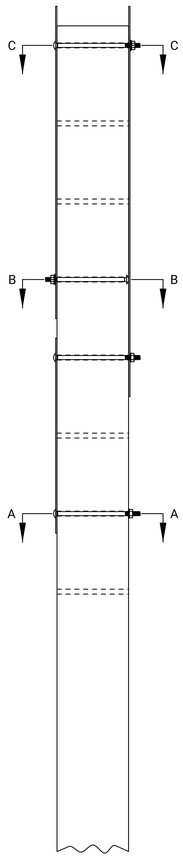
Any additional mounting holes, either through the sign or post, shall be drilled by the contractor. All holes drilled in the post shall be treated with a perservative. All holes drilled in the sign shall be free of any defects and the sheeting around the hole shall not be damaged.

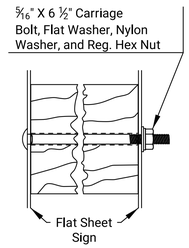
A nylon washer shall be placed against the sheeting when a nut is to be tightened against the sign face.

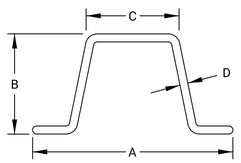
The 3 lb/ft steel "U" post used for reinforced panel sign installations is to be included in the bid item 'SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)'.

When the 2 lb/ft steel "U" post is used for the route marker assemblies attachment, it shall be subsidiary to the bid item 'SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)'.

The aluminum post clip bolt may have a rectangular head if the smaller dimension is equal to the square head dimension.



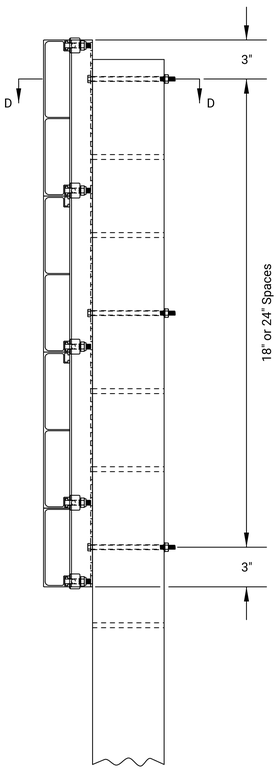


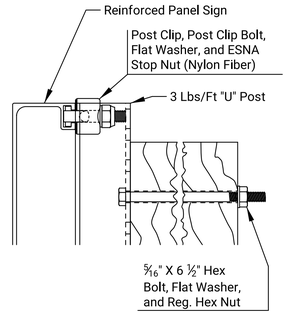


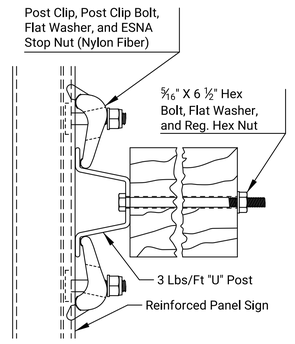
DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8 "	3 1/2 "
B	1 17/32 "	1 3/4 "
C	1 1/4 "	1 5/8 "
D	1/8 "	9/64 "

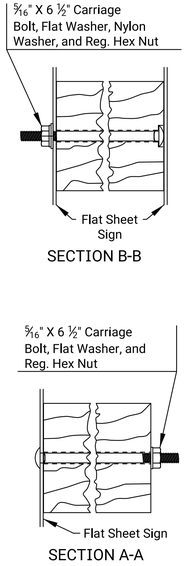
(DIMENSIONS ARE NOMINAL)

"U" POST









TYPICAL MOUNTING OF FLAT SHEET SIGNS

TYPICAL MOUNTING OF REINFORCED PANEL SIGNS

All dimensions are in inches

NO.	DATE	REVISIONS	BY	APP'D
1	10/01/19	Revised drawings and notes	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR MOUNTING SIGNS ON WOOD POSTS

FLAT SHEET AND REINFORCED PANEL

TE481 7/1/03

FHWA APPROVAL			10/01/2019	APP'D	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES		TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.

KDOT Graphics Certified 02-09-2022

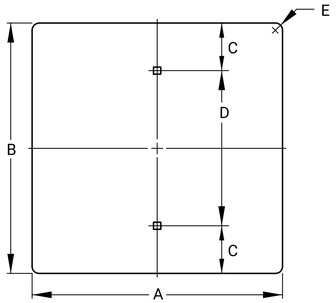
Sh. No. 65

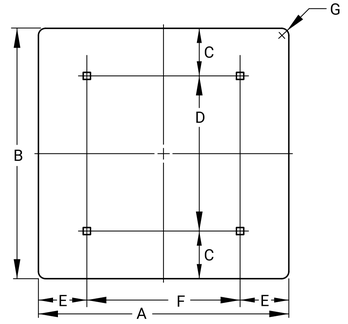
KDOT Graphics Certified

Plotted : 10-FEB-2022 17:45

Drawn By : TCCusick
File : te481.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	66	85





	SIGN SIZE	A	B	C	D	E	T	AREA
(1)	3 X 8	3	8	1	6	3/8	0.040	0.17
(1)	6 X 12	6	12	3	6	3/8	0.063	0.50
	12 X 6	12	6	1 1/2	3	3/4	0.063	0.50
	12 X 9	12	9	1 1/2	6	1 1/2	0.063	0.75
	12 X 18	12	18	3	12	1 1/2	0.063	1.50
	12 X 24	12	24	3	18	1 1/2	0.080	2.00
	12 X 36	12	36	6	24	1 1/2	0.080	3.00
	12 X 48	12	48	6	36	1 1/2	0.080	4.00
	18 X 6	18	6	1 1/2	3	1 1/2	0.063	0.75
	18 X 18	18	18	3	12	1 1/2	0.063	2.25
	18 X 30	18	24	3	24	1 1/2	0.080	3.75
	18 X 36	18	24	6	24	1 1/2	0.080	4.50
	18 X 42	18	24	6	30	1 1/2	0.080	5.25
	18 X 48	18	24	6	36	1 1/2	0.080	6.00
	21 X 15	21	15	1 1/2	12	1 1/2	0.080	2.19
	24 X 6	24	6	1 1/2	3	1 1/2	0.080	1.00
	24 X 12	24	12	3	6	1 1/2	0.080	2.00
	24 X 18	24	18	3	12	1 1/2	0.080	3.00
	24 X 24	24	24	3	18	1 1/2	0.080	4.00
	24 X 30	24	30	3	24	1 1/2	0.080	5.00
	24 X 36	24	36	6	24	1 1/2	0.080	6.00
	30 X 12	30	12	3	6	1 7/8	0.080	2.50
	30 X 15	30	15	1 1/2	12	1 7/8	0.080	3.13
	30 X 18	30	18	3	12	1 7/8	0.080	3.75
	30 X 21	30	21	1 1/2	18	1 1/2	0.080	4.38
	30 X 24	30	24	3	18	1 7/8	0.080	5.00
	30 X 30	30	30	3	24	1 7/8	0.080	6.25
	30 X 36	30	36	6	24	1 7/8	0.080	7.50
	36 X 12	36	12	3	6	1 1/2	0.080	3.00
	36 X 18	36	18	3	12	1 1/2	0.080	4.50
	36 X 24	36	24	3	18	1 1/2	0.080	6.00
	36 X 30	36	30	3	24	2 1/4	0.080	7.50
	36 X 36	36	36	6	24	2 1/4	0.080	9.00
(3)	45 X 36	45	36	3	30	2 1/4	0.100	11.25

	SIGN SIZE	A	B	C	D	E	F	G	T	AREA
	36 X 12	36	12	3	6	3	30	1 1/2	0.080	3.00
	36 X 30	36	30	3	24	3	30	2 1/4	0.080	7.50
	36 X 48	36	48	9	30	6	24	0	0.100	12.00
	36 X 60	36	60	12	36	6	24	0	0.100	15.00
(2)	36 X 72	36	72	6	60	6	24	0	0.100	18.00
	42 X 12	48	12	3	6	6	30	1 1/2	0.080	3.50
	42 X 18	48	18	3	12	6	30	1 1/2	0.080	5.25
	42 X 24	48	24	6	12	6	30	1 7/8	0.080	7.00
	42 X 36	48	36	6	24	6	30	0	0.100	10.50
	48 X 12	48	12	3	6	9	30	1 1/2	0.080	4.00
	48 X 18	48	18	3	12	9	30	1 1/2	0.080	6.00
	48 X 24	48	24	6	12	9	30	1 7/8	0.080	8.00
	48 X 30	48	30	6	18	9	30	0	0.100	10.00
	48 X 36	48	36	6	24	9	30	0	0.100	12.00
	48 X 42	48	42	6	30	9	30	0	0.100	14.00
	48 X 48	48	48	9	30	9	30	0	0.100	16.00
	48 X 60	48	60	12	36	9	30	0	0.100	20.00
(2)	48 X 72	48	72	6	60	9	30	0	0.100	24.00
(2)	48 X 96	48	96	12	72	9	30	0	0.100	32.00
	60 X 12	60	12	3	6	12	36	0	0.100	5.00

SIGN SIZE	A	B	C	D	E	F	G	T	AREA
60 X 18	60	18	3	12	12	36	0	0.100	7.50
60 X 24	60	24	6	12	12	36	0	0.100	10.00
60 X 30	60	30	6	18	12	36	0	0.100	12.50
60 X 36	60	36	6	24	12	36	0	0.100	15.00
60 X 42	60	42	6	30	12	36	0	0.100	17.50
60 X 48	60	48	9	30	12	36	0	0.100	20.00
72 X 12	72	12	3	6	15	42	0	0.100	6.00
72 X 18	72	18	3	12	15	42	0	0.100	9.00
72 X 24	72	24	6	12	15	42	0	0.100	12.00
72 X 30	72	30	6	18	15	36	0	0.100	15.00
72 X 36	72	36	6	24	15	42	0	0.100	18.00
72 X 42	72	42	6	30	15	42	0	0.100	21.00
72 X 48	72	48	9	30	15	42	0	0.100	24.00
84 X 12	84	18	3	6	18	48	0	0.100	7.00
84 X 18	84	18	3	12	18	48	0	0.100	10.50
84 X 24	84	24	6	12	18	48	0	0.100	14.00
84 X 30	84	30	6	18	18	48	0	0.100	17.50
84 X 36	84	36	6	24	18	48	0	0.100	21.00
84 X 42	84	42	6	30	18	48	0	0.100	24.50
84 X 48	84	48	9	30	18	48	0	0.100	28.00

NOTE:
All holes are 3/8" square, unless otherwise noted.

The dimension "T" is the thickness of the aluminum blank.

(1) Holes shall be 5/16" diameter.

(2) Dimension "D" requires a center hole.

(3) Additional hole 12" below top hole.

All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
1	10/01/19	Update sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR FLAT SHEET SIGNS

TE506 7/1/03

FHWA APPROVAL			10/01/2019	APP'D	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.	

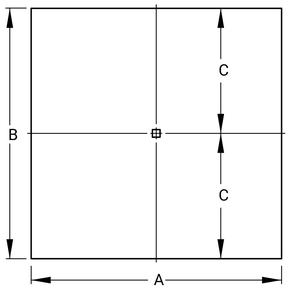
KDOT Graphics Certified 02-09-2022

Sh. No. 66

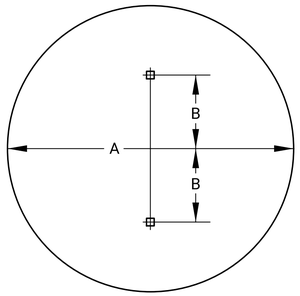
KDOT Graphics Certified

Plotted : 10-FEB-2022 17:45
Drawn By : TCCusick
File : te506.dgn

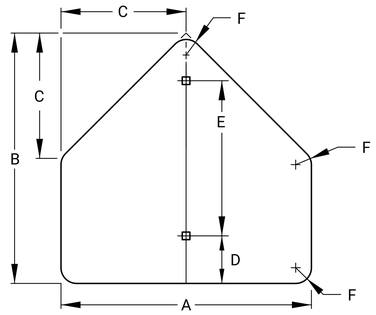
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	67	85



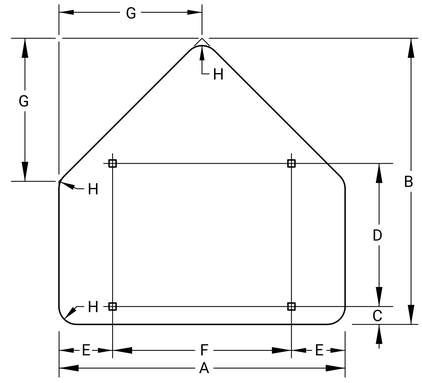
SIGN SIZE	A	B	C	T	AREA
6 X 6	6	6	3	0.063	0.25



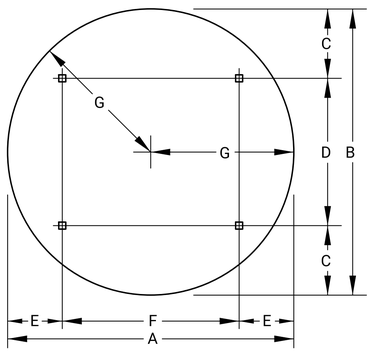
SIGN SIZE	A	B	T	AREA
36 DIA	36	12	0.080	7.07



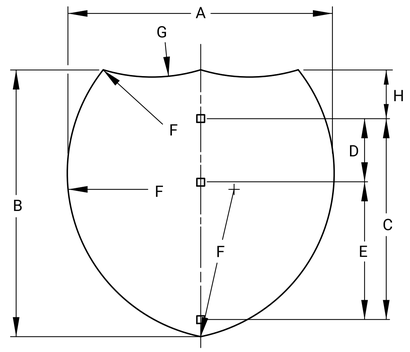
SIGN SIZE	A	B	C	D	E	F	T	AREA
30 X 30	30	30	15	3	24	1 ⅞	0.080	4.69
36 X 36	36	36	18	6	24	2 ¼	0.080	6.75



SIGN SIZE	A	B	C	D	E	F	G	H	T	AREA
48 X 48	48	48	3	24	9	30	24	3	0.100	12.00



SIGN SIZE	A	B	C	D	E	F	G	T	AREA
48 X 48	48	48	12	24	9	30	24	0.100	12.57



INDEPENDENT USE

DIMENSIONS										
SIZE	A	B	C	D	E	F	G	H	T	AREA
24 X 24	24	24	18	-	-	15	15	3	0.080	3.20
36 X 36	36	36	30	12	18	22 ½	22 ½	3	0.080	7.20
30 X 24	30	24	18	-	-	17	24	3	0.080	3.99
45 X 36	45	36	30	12	18	25 ½	36	3	0.100	8.99

NOTE:
All holes are ⅜" square, unless otherwise noted.
Dimension "T" is the thickness of the aluminum blank.

All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
	10/01/19	Update sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR FLAT SHEET SIGNS

TE509 7/1/03

FHWA APPROVAL			10/01/2019	APP'D	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

Sh. No. 67

KDOT Graphics Certified

Plotted : 10-FEB-2022 17:46

Drawn By : TCCusick
File : te509.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	68	85

DETAILED SPECIFICATIONS FOR FLAT SHEET SIGNS AND OVERLAY PANELS

All new flat sheet sign blanks shall be of the fabrication and thickness shown on the flat sheet blank detail sheets, unless other details are shown in the plans.

Flat sheet blanks shall be used for signs that are less than or equal to 7'-0" in length and/or less than or equal to 4'-0" in height, unless other details are shown in the plans. Flat sheet blanks shall also be used for signs that are 4'-0" in length and less than or equal to 8'-0" in height, unless other details are shown in the plans.

The design details for signs (color, letter height, and letter series) shall be as shown in the FHWA Standard Highway Signs and Markings book (2004 edition and supplements), unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The school warning signs, the "SCHOOL" portion of the S5-1 sign, S4-3p plaque, and any supplemental plaques used with these warning signs shall have a fluorescent yellow-green background, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

DETAILED SPECIFICATIONS FOR REINFORCED PANEL SIGNS

All new reinforced sign panels shall be of the fabrication and thickness shown on the reinforced panel detail sheets. If extrusheet fabricated sign panels are used, they shall be of the length, width and in the position shown. If extrusheet fabricated panel dimensions are not shown, a line of legend should be placed entirely on one panel. If extruded fabricated sign panels are used, either 1'-0" or 6" panels shall be used. The 6" panels shall be used only at the top or bottom of signs.

Reinforced panels shall be used for signs that are greater than 7'-0" in length or greater than 4'-0" in height, unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

Letters and numbers on reinforced panel signs are modified Series "E" unless otherwise shown.

Spacing table dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
2	10/01/19	Changed notes	D.D.G.	E.W.N.
1	7/23/10	Changed Notes and Sheeting Type	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS

TE590 7/01/03

FHWA APPROVAL			10/01/2019	APP'D	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

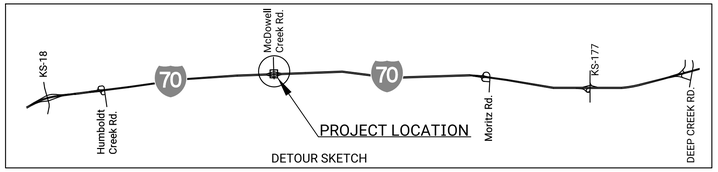
Sh. No. 68

KDOT Graphics Certified

Drawn By : TCCusick
File : te590.dgn

Plotted : 10-FEB-2022 17:46

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	69	85

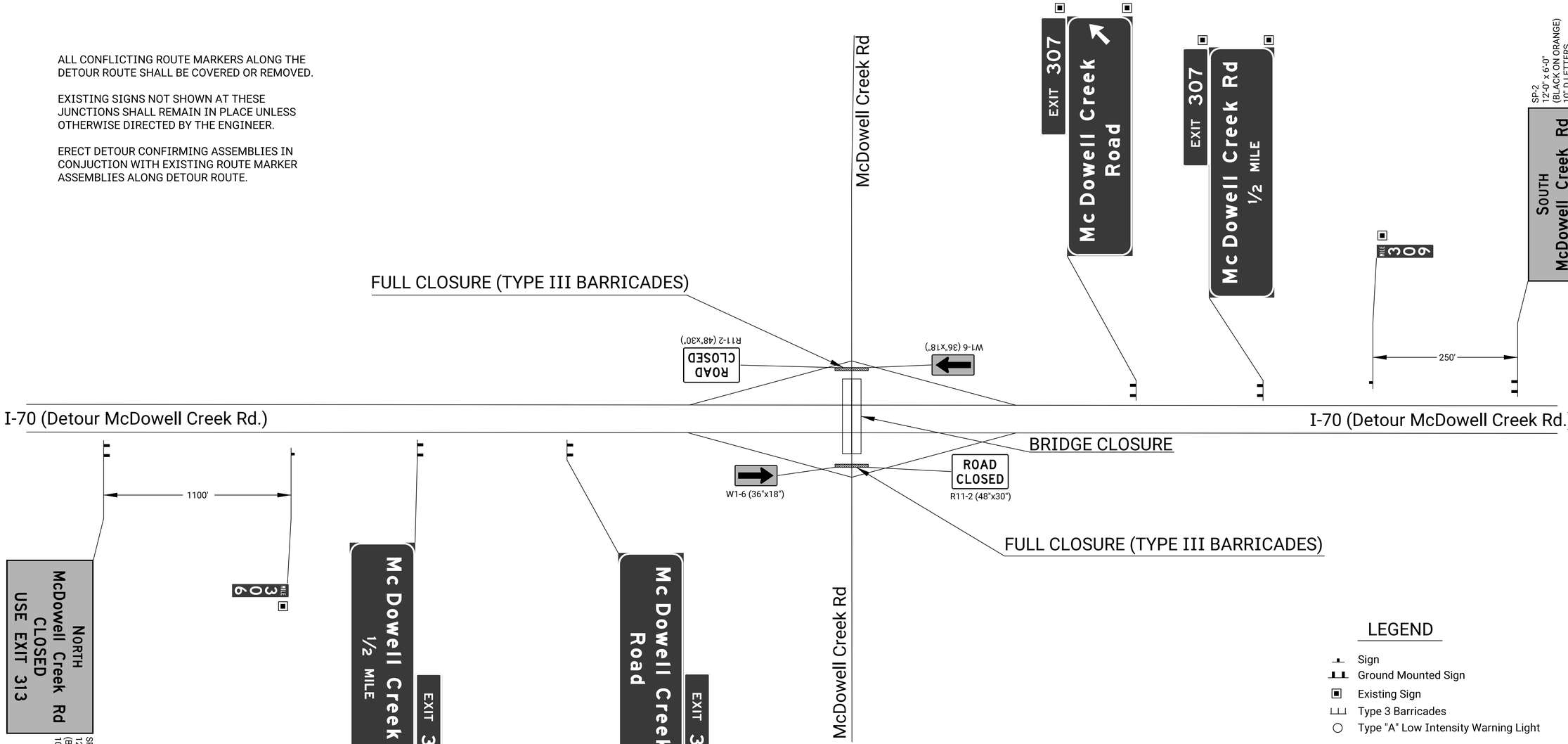


DETOUR SKETCH

ALL CONFLICTING ROUTE MARKERS ALONG THE DETOUR ROUTE SHALL BE COVERED OR REMOVED.

EXISTING SIGNS NOT SHOWN AT THESE JUNCTIONS SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ERECT DETOUR CONFIRMING ASSEMBLIES IN CONJUCTION WITH EXISTING ROUTE MARKER ASSEMBLIES ALONG DETOUR ROUTE.



LEGEND

- Sign
- Ground Mounted Sign
- Existing Sign
- Type 3 Barricades
- Type "A" Low Intensity Warning Light

No Scale

SHEET 1 OF 3

KANSAS DEPARTMENT OF TRANSPORTATION

DETOUR PLAN

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 02-10-2022

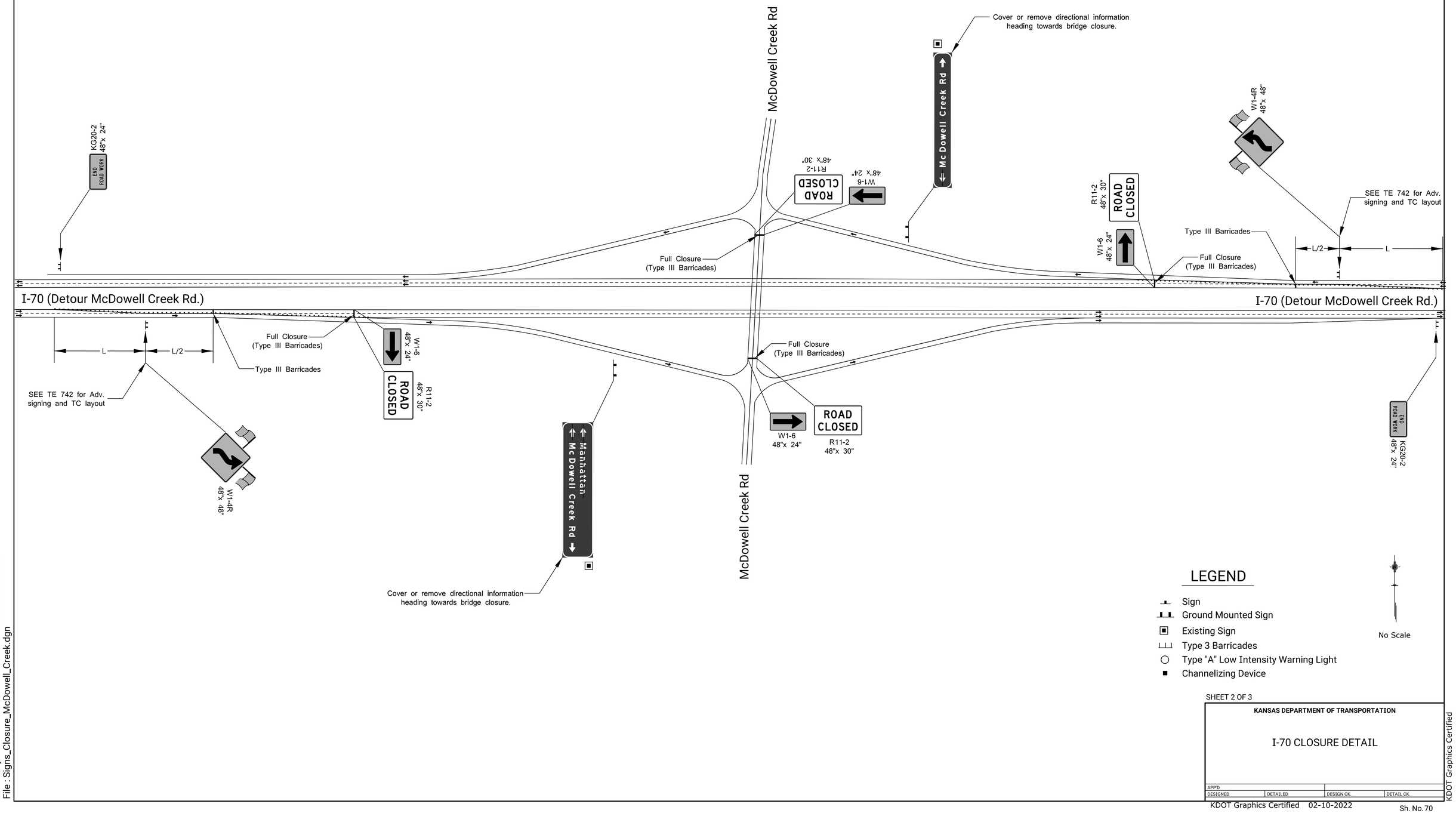
Sh. No. 69

KDOT Graphics Certified

Drawn By : TCCusick Plotted : 10-FEB-2022 17:46
File : Signs_McDowell_Creek.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	70	85

This Sheet is for when I-70 is closed for bridge demolition or less than 3 days for Overhead Work and I-70 traffic will be Detoured on the existing ramps.



LEGEND

- Sign
- Ground Mounted Sign
- Existing Sign
- Type 3 Barricades
- Type "A" Low Intensity Warning Light
- Channelizing Device

No Scale

SHEET 2 OF 3

KANSAS DEPARTMENT OF TRANSPORTATION

I-70 CLOSURE DETAIL

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 02-10-2022

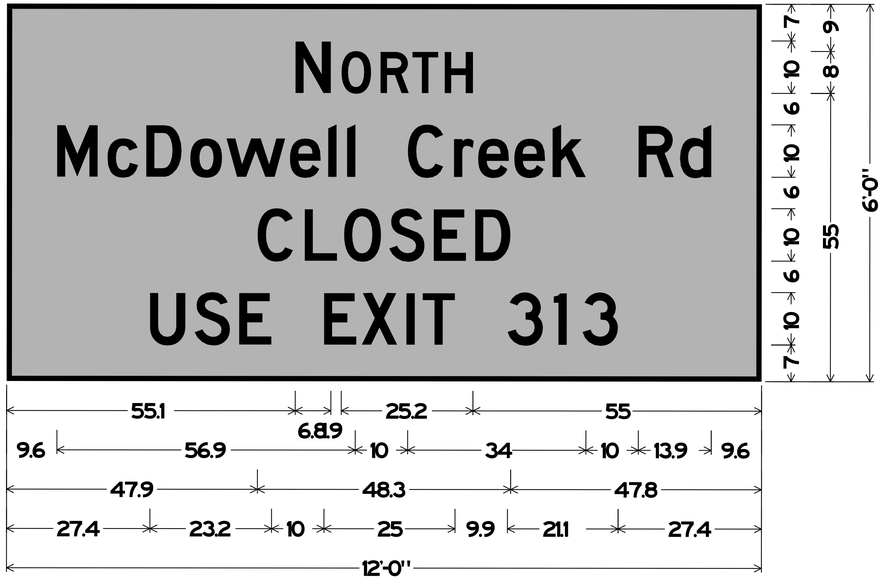
Sh. No.70

KDOT Graphics Certified

Drawn By : TCCusick Plotted : 10-FEB-2022 17:46
File : Signs_Closure_McDowell_Creek.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	71	85

SP-1



Special EB;
3.0" Radius, 1.0" Border, Black on Orange;
"NORTH", D 2K; "McDowell Creek Rd", D 2K; "CLOSED", D 2K;
"USE EXIT 313", D 2K;
Table of distances between letter and object lefts

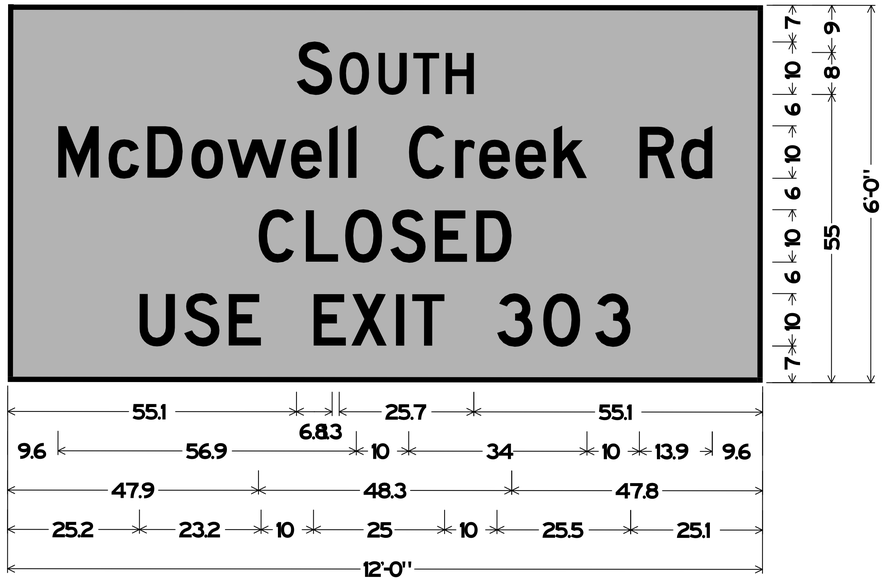
55.1	N 8.7	O 7.5	R 6.1	T 6.1	H 5.4	55.1

9.6	M 9.6	c 7.4	D 8.4	o 6.9	w 12.1	e 7.3	l 3.6	l 11.6	C 8.8	r 4.6	e 6.9	e 7.3	k 16.4	R 7.9	d 6.0	9.6

47.9	C 9.0	L 7.5	O 8.6	S 8.5	E 7.9	D 6.8	47.8

27.4	U 8.5	S 8.5	E 16.2	E 7.2	X 8.5	I 3.0	T 16.2	3 8.8	1 5.5	3 6.8	27.4

SP-2



Special WB;
3.0" Radius, 1.0" Border, Black on Orange;
"SOUTH", D 2K; "McDowell Creek Rd", D 2K; "CLOSED", D 2K;
"USE EXIT 303", D 2K;
Table of distances between letter and object lefts

55.1	S 8.1	O 7.5	U 6.6	T 6.2	H 5.4	55.1

9.6	M 9.6	c 7.4	D 8.4	o 6.9	w 12.1	e 7.3	l 3.6	l 11.6	C 8.8	r 4.6	e 6.9	e 7.3	k 16.4	R 7.9	d 6.0	9.6

47.9	C 9.0	L 7.5	O 8.6	S 8.5	E 7.9	D 6.8	47.8

25.2	U 8.5	S 8.5	E 16.2	E 7.2	X 8.5	I 3.1	T 16.2	3 8.8	0 9.8	3 6.9	25.1

Plotted : 10-FEB-2022 17:46
Drawn By : TCCusick
File : Signs_Details.dgn

SHEET 3 OF 3

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SPECIAL SIGNS

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 02-10-2022

Sh. No. 71

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	72	85

1) Design Speed: Those items delegated to temporary traffic control should be designed and installed using the posted/legal speed of the roadway prior to work starting.

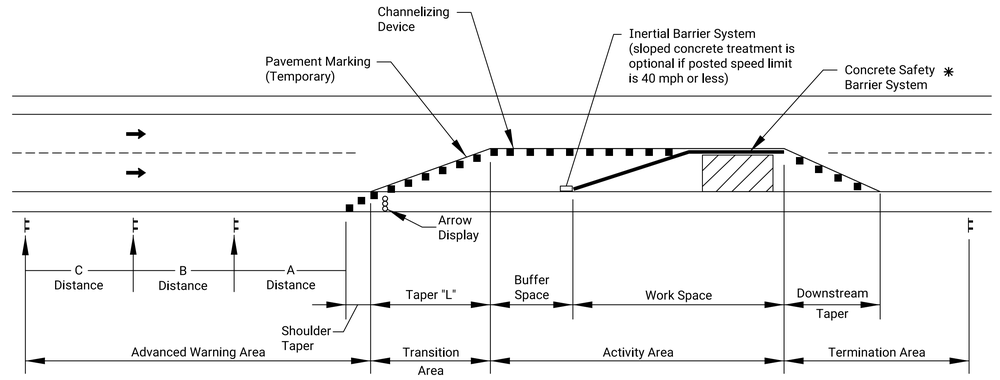
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

4) When existing pedestrian facilities are disrupted, closed, or relocated, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

5) When the driving surface open to traffic is milled or is a temporary surface made of loose material, or when directed by the engineer a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed a "C" distance after the W20-1 (Road Work Ahead) sign. A W8-15p motorcycle plaque shall be used to supplement the W8-15 or W8-7 signs. All signs shall be displayed as long as the condition is present.

6) Alternative temporary rumble strip options may be available. Please contact the Temporary Traffic Control Unit for more information at 785-296-1179 or 785-296-1183.



TYPICAL WORK ZONE COMPONENTS

✳ When concrete barrier system is used, portable channelizing devices are not needed along the tangent barrier section.

Minimum advance warning sign spacing (in feet):

SPEED (MPH) ✳	*A*	*B*	*C*
URBAN (40 MPH OR LOWER)	*100*	*100*	*100*
URBAN (45 MPH OR HIGHER)	*350*	*350*	*350*
RURAL (55 MPH OR LOWER)	*500*	*500*	*500*
RURAL (60 MPH OR HIGHER)	*750*	*750*	*750*
EXPRESSWAY/FREEWAY	*1000*	*1500*	*2640*

✳ Posted speed prior to work starting

The minimum spacing between signs shall be no less than 100', unless directed by the engineer.

The spacing between any signs may be increased beyond the minimum values in the table above as approved by the engineer in order to maximize visibility.

Taper Formulas:

L = WS for speeds of 45 MPH or more

$L = WS^2/60$ for speeds of 40 MPH or less

Where: L = Minimum length of taper in feet
S = Numericial value of posted speed prior to work starting in MPH
W = Width in offset feet

Shifting Taper=1/2 L
Shoulder Taper=1/3 L

Channelizer Placement:

(1) The spacing between devices in transition area (taper) should not exceed a distance in feet equal to 1/2 the posted speed limit in mph prior to work starting.

(2) The spacing between devices in the advanced warning area and the activity area should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.

(3) Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.

(4) Place directional indicator barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.

(5) Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.

Buffer Space

SPEED (MPH) ✳	*20*	*25*	*30*	*35*	*40*	*45*	*50*	*55*	*60*	*65*	*70*	*75*
LENGTH (ft)	*115*	*155*	*200*	*250*	*305*	*360*	*425*	*495*	*570*	*645*	*730*	*820*

✳ Posted speed prior to work starting

Neither work activity nor storage of equipment, vehicles, or material should occur in the buffer space. When a protection vehicle is placed in advance of the work space, only the space upstream of the vehicle constitutes the buffer space.

If temporary concrete safety barrier system is used to separate approaching traffic from the work space, the barrier system shall be considered part of the activity area. A full lane width should be available throughout the length of the buffer space. See typical work zone components above.

NO.	DATE	REVISIONS	BY	APP'D
3				
2	03/13/18	W8-15p usage changed to Shall	R.W.B.	E.G.K.
1	08/18/15	Channelizer spacing info	R.W.B.	K.E.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
GENERAL NOTES

TE700

FHWA APPROVAL		03/13/18	APP'D	Eric Kocher	
DESIGNED	B.A.H.	DETAILED	R.W.B	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

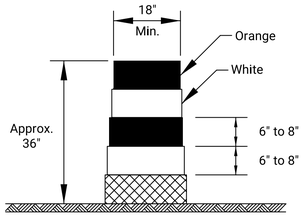
KDOT Graphics Certified 02-09-2022

Sh. No. 72

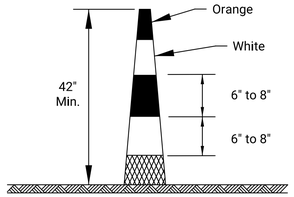
KDOT Graphics Certified

Plotted : 10-FEB-2022 17:46
Drawn By : TCCusick
File : te700.dgn

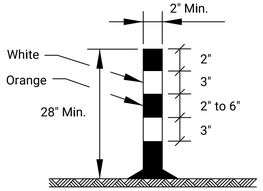
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	73	85



DRUM

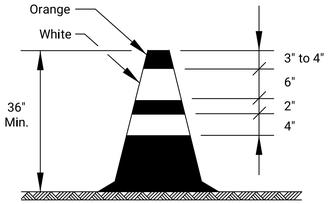


CONICAL DELINEATOR

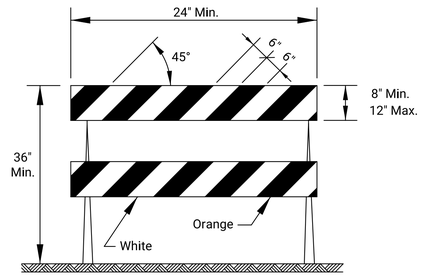


TUBULAR MARKER

Striping as shown for up to 42".

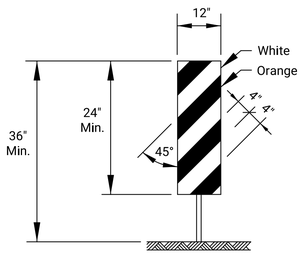


TRAFFIC CONE



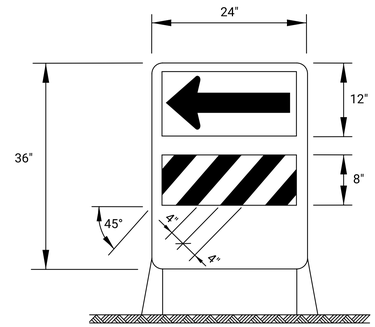
TYPE 2 BARRICADE

For rails less than 36" long, 4" wide stripes may be used. All stripes shall slope downward to the traffic side for channelization.



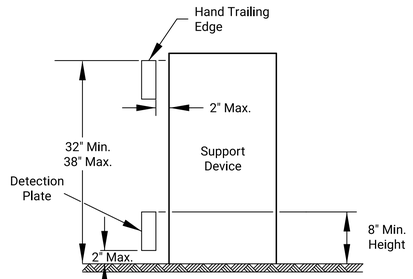
VERTICAL PANEL

The stripes shall slope downward to the traffic side for channelization.



DIRECTION INDICATOR BARRICADE

The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.



PEDESTRIAN CHANNELIZER

1. Support device shall not project beyond the detection plate into the pathway.
2. Hand trailing edges and detection plates are optional for continuous walls.
3. Interconnect pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
4. Alternate pathways shall be firm, stable, and slip resistant.
5. Treat height differentials > 1/2" in the surfaces of alternate paths with a firm, stable, and slip resistant temporary ramp having a slope of 12:1 or flatter and having a width equal to the alternate path.
6. Use alternating orange/white on interconnected devices.

Item	Location	Cross-overs	Shoofly Diversions	Tangents	Tapers	Ramps	Head to Head	Object Identifier	Lead-in Devices	Gores
Portable										
	Drums	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Conical Delineators	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Vertical Panels	(2)	(2)	(2)	(2)	(2)	(1,2)	Yes	(2)	(2)
	Direction Indicator Barricade	No	No	No	Yes	No	No	No	No	No
	Type 2 Barricade	(2)	(2)	(2)	(2)	No	No	Yes	No	No
	Traffic Cones	No	No	(4)	(4)	(4)	No	(4)	(4)	(4)
Fixed										
	Tubular Markers	(3)	(3)	(3)	No	(3)	Yes	No	Yes	Yes
	Vertical Panels	(3)	(3)	(3)	(3)	(3)	(3)	Yes	(2,3)	(2)

(1) Not allowed on centerline delineation along freeways or expressways.
(2) The stripes shall slope downward to the traffic side for channelization.
(3) May be used upon the approval of the engineer.
(4) Daytime operations only.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
CHANNELIZING DEVICES

TE702

FHWA APPROVAL		06/01/15	APP'D	Kristina Ericksen	
DESIGNED	L.E.R.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

KDOT Graphics Certified 02-09-2022

Sh. No. 73

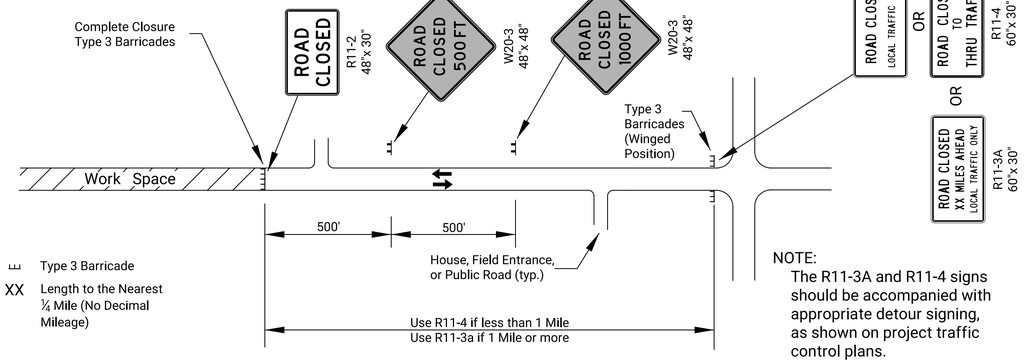
KDOT Graphics Certified

Plotted : 10-FEB-2022 17:46

Drawn By : TCCusick
File : te702.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	74	85

Note: Signs shown for one approach to work zone.



NOTE:
The R11-3A and R11-4 signs should be accompanied with appropriate detour signing, as shown on project traffic control plans.

FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE (MAINLINE OR SIDE ROAD)

Note: Sign shown for one approach to intersection (work zone).

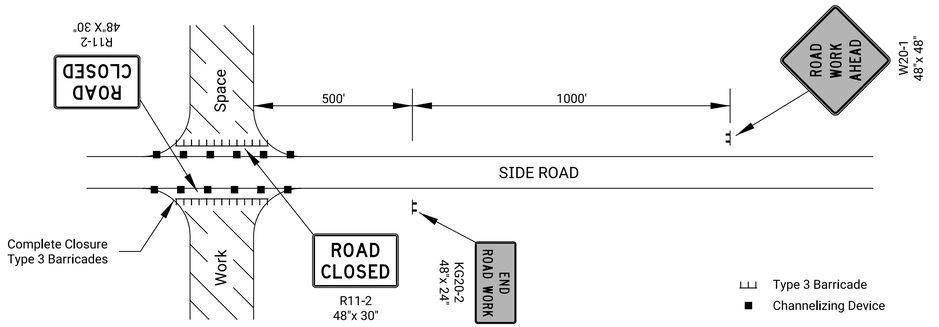


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

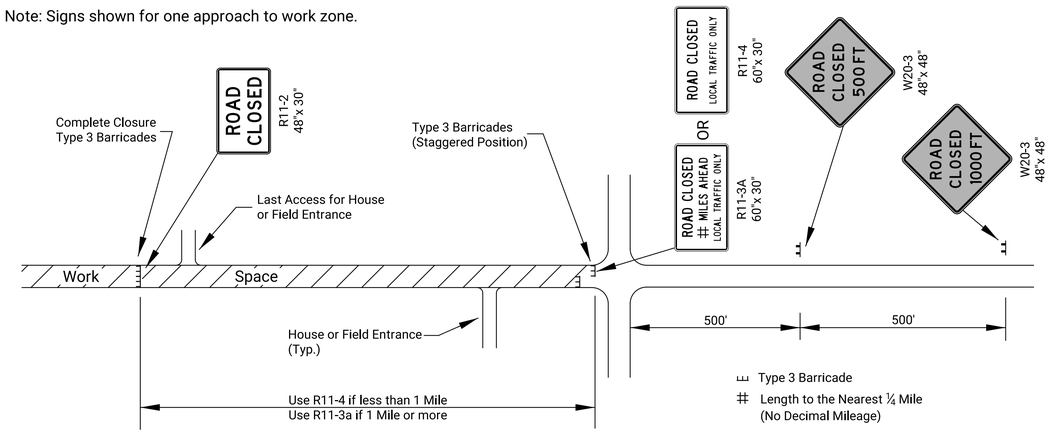


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

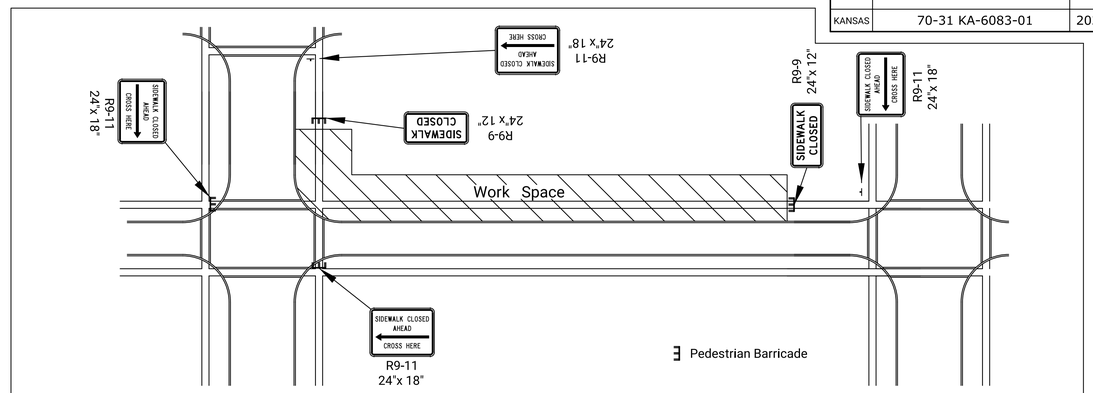
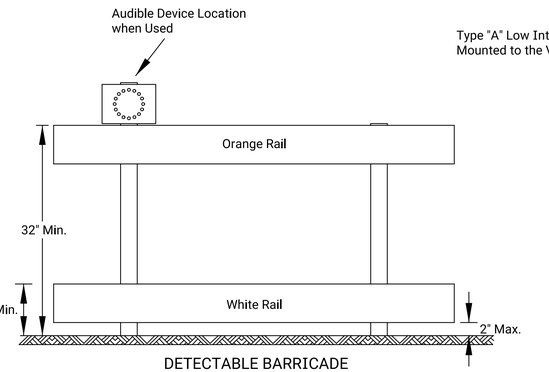
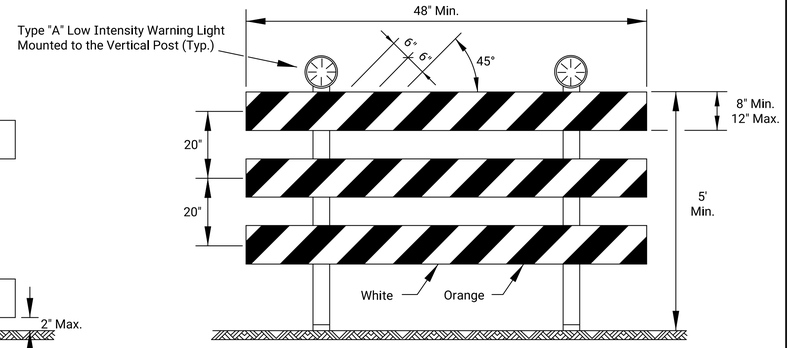


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE



DETECTABLE BARRICADE

1. Support device shall not project beyond the detection plate into the pathway.
2. Barricades shall be used to close the entire width of the pathway.
3. Do not use warning lights on pedestrian barricades.
4. Do not use warning lights on audible devices.



TYPE 3 BARRICADE WITH LIGHTS

Approved signs mounted on Type 3 barricades should not cover more than 50% of the top two rails or 33% of the total area of the three rails.

When barricades are placed end-to-end or staggered, a Type "A" low intensity warning light shall be mounted to the vertical post near each outside corner of the end barricades.

ROAD CLOSED GENERAL NOTES

As shown in Figure 1, at the point where thru traffic must detour and local traffic can proceed to the location where the roadway is completely closed, the R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) or R11-4 (ROAD CLOSED LOCAL TRAFFIC ONLY or ROAD CLOSED TO THRU TRAFFIC) sign shall be used with Type 3 barricades (winged position), placed on the shoulders of roadway.

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be longitudinally staggered to maintain the appearance of a closed roadway. A second line of end-to-end Type 3 barricades shall be placed just beyond the last access point in the work zone, to completely close the roadway.

The R11-4 (ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is less than 1 mile.

The R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is 1 mile or greater.

The words "BRIDGE OUT" (or BRIDGE CLOSED) may be substituted for the words "ROAD CLOSED" on the R11-3a or R11-4 sign where applicable.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CLOSURES

TE704

FHWA APPROVAL			06/01/15	APP'D	Kristina Ericksen		
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES		TRACED	
DESIGN CK.		DETAIL CK.		QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

Sh. No. 74

KDOT Graphics Certified

Plotted : 10-FEB-2022 17:46

Drawn By : TCCusick
File : te704.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	75	85

SIGN LAYOUT INFORMATION

KG20-2 — Std. Size Expwy/Freeway: 6" C, 48"x 24"

KG20-5 — Std. Size Expwy/Freeway: 6" C, 48"x 24"

KM4-20 — Std. Size: 3" C, 24"x 6" — Expwy/Freeway: 6" C, 48"x 12"

W7-3a — Mileage to be Determined by the Engineer.

W8-17 — Std. Size Expwy/Freeway: 48"x 48"

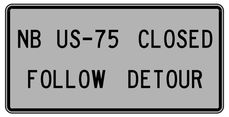
W8-17P (Optional) — Std. Size Expwy/Freeway: 30"x 24"

W8-15 — Std. Size Expwy/Freeway: 8" D, 48"x 48"

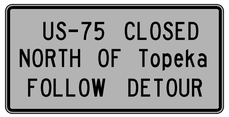
W8-7 — Std. Size Expwy/Freeway: 8" D, 48"x 48"

W8-15p — Std. Size Expwy/Freeway: 30"x 24"

W8-11 — Std. Size Expwy/Freeway: 8" D, 48"x 48"



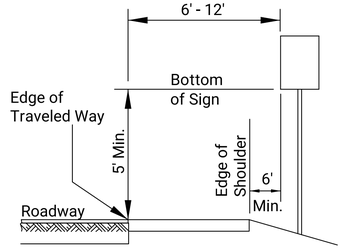
SP-01 (Special Sign) — Std. Size: 6" C — Expwy/Freeway: 10" D



SP-02 (Special Sign)

Std. Size		Expwy/Freeway	
Uppercase:	6" C	Uppercase:	10" D
Lowercase:	4.5" C	Lowercase:	8" D

All city names and street names on special signs and destination signs must have upper and lower case letters.

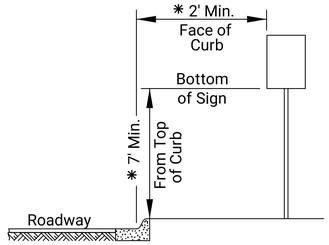


RURAL

1) Ground-mounted signs shall be mounted at a minimum height of 5' measured from the bottom of sign to the near edge of the pavement.

2) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

3) The height of the secondary sign mounted below another sign may be 4' measured from the bottom of the sign to the near edge of the pavement. Signs shall not overlap each other.



URBAN

1) Signs shall be mounted at a minimum height of 7' measured from the bottom of sign to the near edge of the pavement.

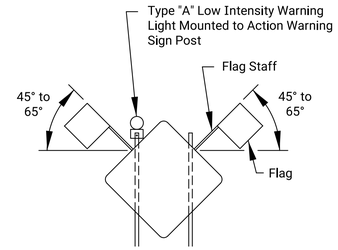
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

3) Signs mounted lower than 7' should not project more than 4" into pedestrian facilities.

4) The height from of the secondary sign mounted below another sign may be 6' measured from the bottom of sign to the near edge of the pavement. Signs shall not overlap each other.

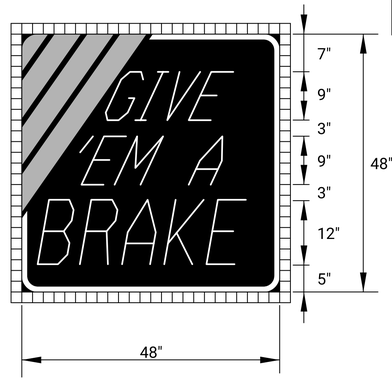
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

* 6) Pedestrian detour signing shall be a minimum of 2' measured from the top of the pedestrian pathway to the bottom of the sign and shall not protrude into the walkway nor shall it project beyond the back of curb.



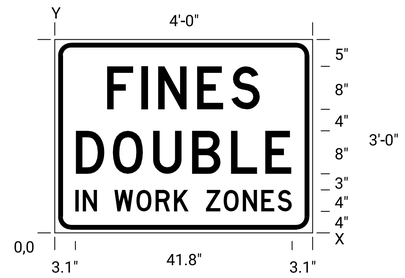
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

In the case of hitting rock when driving posts
1. Shift the sign location. Do not violate minimum sign spacing.
2. With the engineer's approval, use acceptable alternative sign stands.



KI-104a

Sign Number	GIVE EM A BRAKE
Width x Height	4'-0" x 4'-0"
Border Width	1.0"
Corner Radius	4.0"
Stripe Width	3.0"
Mounting	Ground
Background	Type: Non-Reflective
	Color: Black
Legend/Border	Type: Reflective
	Color: White
Legend Font	Dutch 801 Roman SWC 25 Degree Slant
Stripes	Type: Reflective
	Color: Orange



KI-105a

Sign Number	FINES DOUBLE
Width x Height	4'-0" x 3'-0"
Border Width	0.9"
Corner Radius	3.0"
Mounting	Ground
Background	Type: Reflective
	Color: White
Legend/Border	Type: Non-Reflective
	Color: Black

Dimensions in inches — Spacings are to start of next letter

Y FONT	LETTER SPACINGS															HT LEN
23.0 D	X	F	I	N	E	S	X									8.0
	9.7	6.4	3.2	7.3	6.4	5.4	9.7									28.6
11.0 D	X	D	O	U	B	L	E	X								8.0
	3.9	6.9	7.5	7.3	7.3	6.4	4.9	3.9								40.3
4.0 D	X	I	N	X	W	O	R	K	X	Z	O	N	E	S	X	4.0
	3.1	1.6	2.7	3.2	4.3	3.8	3.6	2.8	3.2	3.4	3.8	3.6	3.2	2.7	3.1	41.8

Notes:

Typically, there are two sets of informational signs installed per project: one for each direction of traffic.

Install signs a minimum of 500' in advance of the road work ahead sign. The engineer may designate a more appropriate location if conditions dictate.

The informational signs are not to interfere with the traffic control signs for the project.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SIGN INFORMATION

TE710

FHWA APPROVAL		06/01/15	APP'D	Kristina Pyle	
DESIGNED	R.W.B.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

KDOT Graphics Certified 02-09-2022

Sh. No. 75

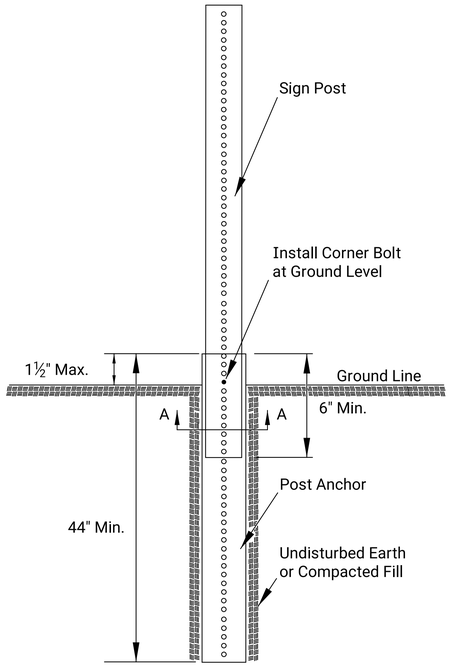
KDOT Graphics Certified

Plotted : 10-FEB-2022 17:46

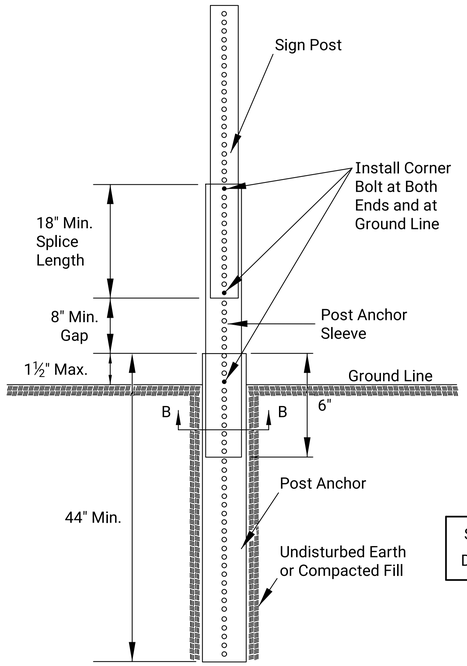
Drawn By : TCCusick
File : te710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	76	85

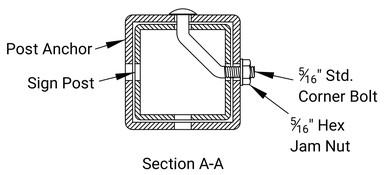
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



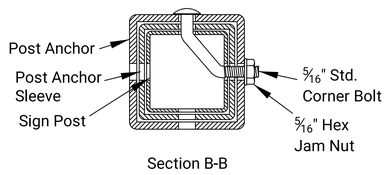
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

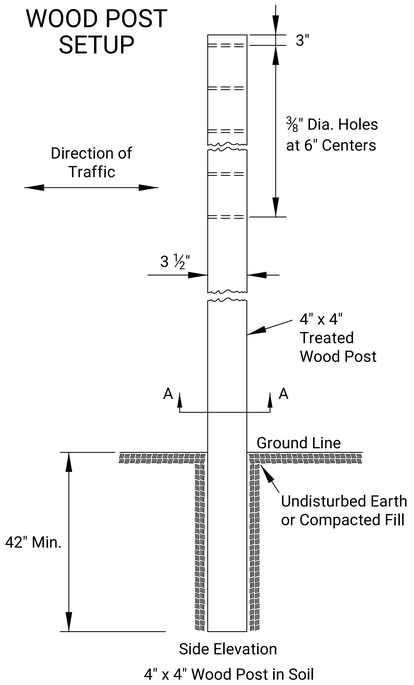


Section B-B

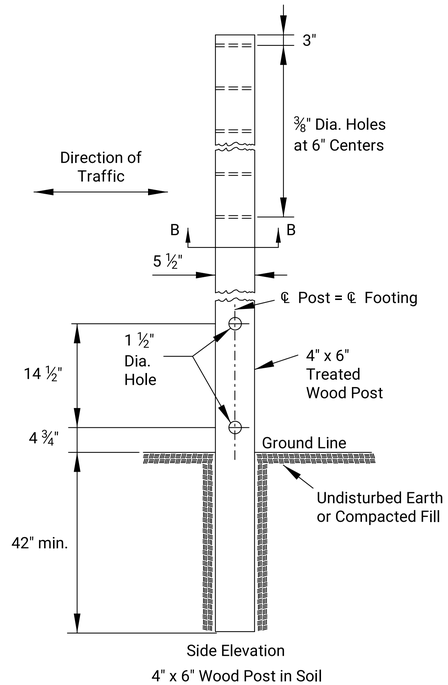
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

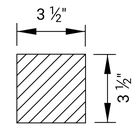
WOOD POST SETUP



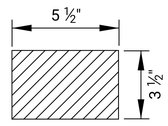
Side Elevation
4" x 4" Wood Post in Soil



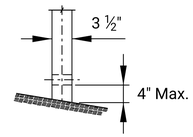
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



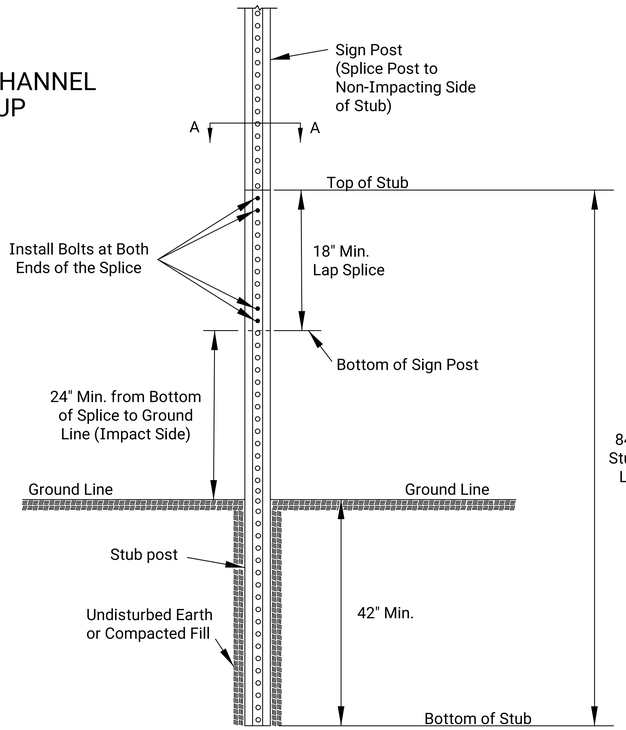
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

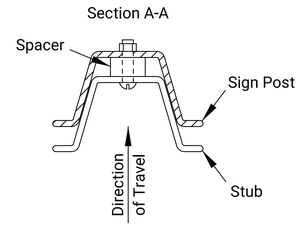
3 LB/F U-CHANNEL SETUP



Notes:

Place two bolts at both ends of the splice through the holes nearest the ends of the splice.

Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.



NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

FHWA APPROVAL			06/01/15	APP'D	Kristina Pyle		
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES		TRACED	
DESIGN CK.		DETAIL CK.		QUAN. CK.		TRACE CK.	

KDOT Graphics Certified 02-09-2022

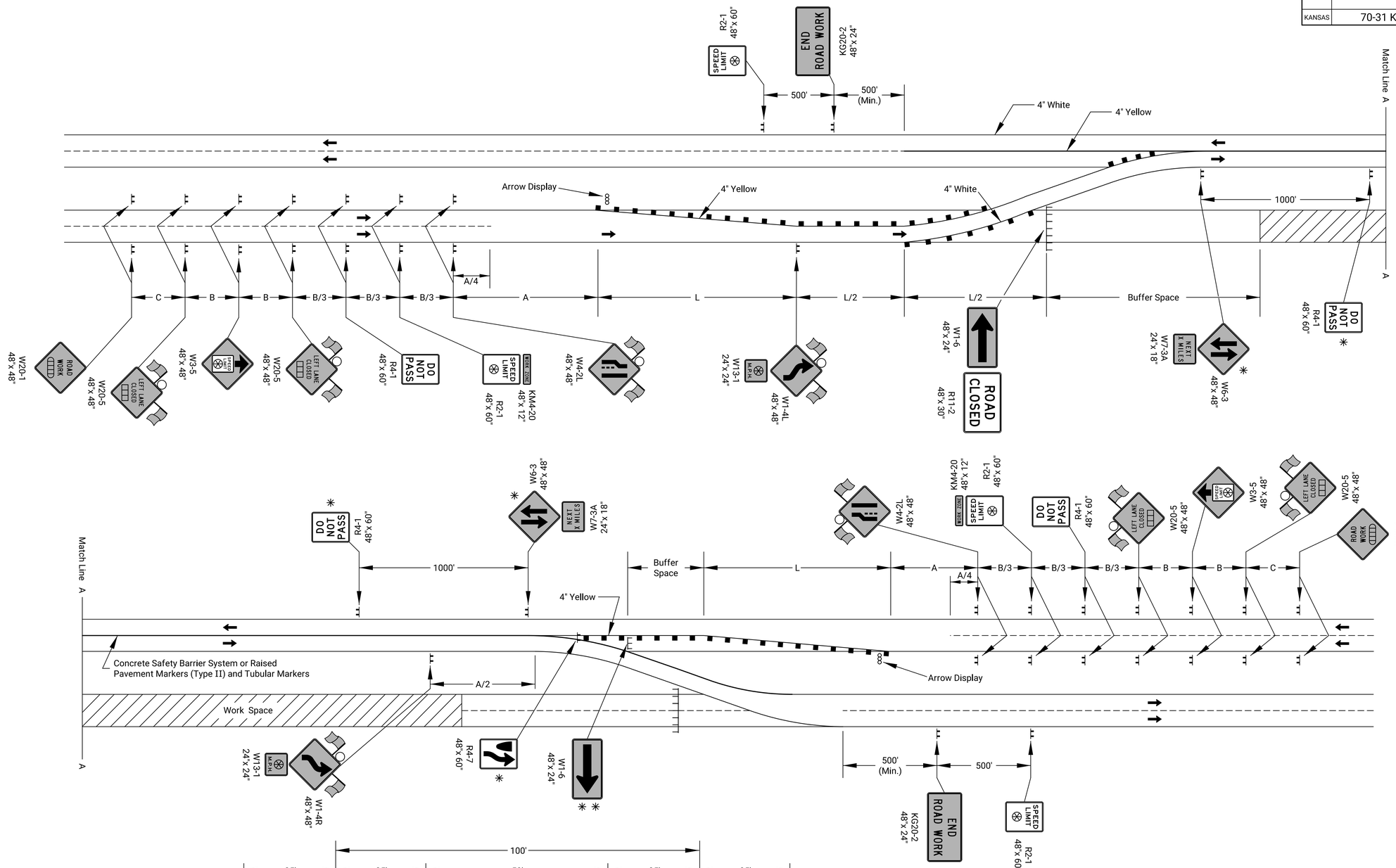
Sh. No. 76

KDOT Graphics Certified

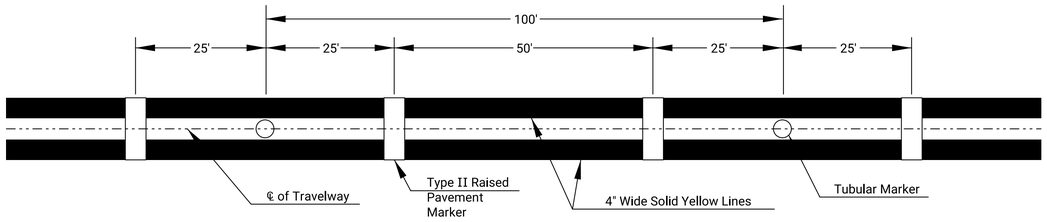
Plotted : 10-FEB-2022 17:46

Drawn By : TCCusick
File : te712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	77	85



- Type 3 Barricades
- X Length to the Nearest Whole Mile
- ■ Channelizing Device
- Ahead, 1500 ft, or 1 mile
- Ahead, 1000 ft, 1500 ft, or ½ mile
- Speed to be determined by the Engineer
- ○ Type "A" Low Intensity Warning Light



Centerline treatment for two-lane, two-way traffic on normally divided roadways. Tubular markers and temporary raised pavement markers (Type II).

The W6-3 & R4-1 sign combination may be required at additional locations along the project. The spacing between these locations shall be a maximum of 1 mile.The W7-3A sign should be ounted with the W6-3 sign at 2 mile increments on a project of 4 miles or longer.

✳ Sign to be eliminated if concrete safety barrier system is used.

✳✳ Barricade to be eliminated and sign W1-6 to be mounted on skids if concrete safety barrier system is used.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DIVIDED HIGHWAY CROSSOVER FROM RIGHT LANE

TE742

FHWA APPROVAL		06/01/15	APP'D	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

KDOT Graphics Certified 02-09-2022

Sh. No. 77

Drawn By : TCCusick
File : te742.dgn

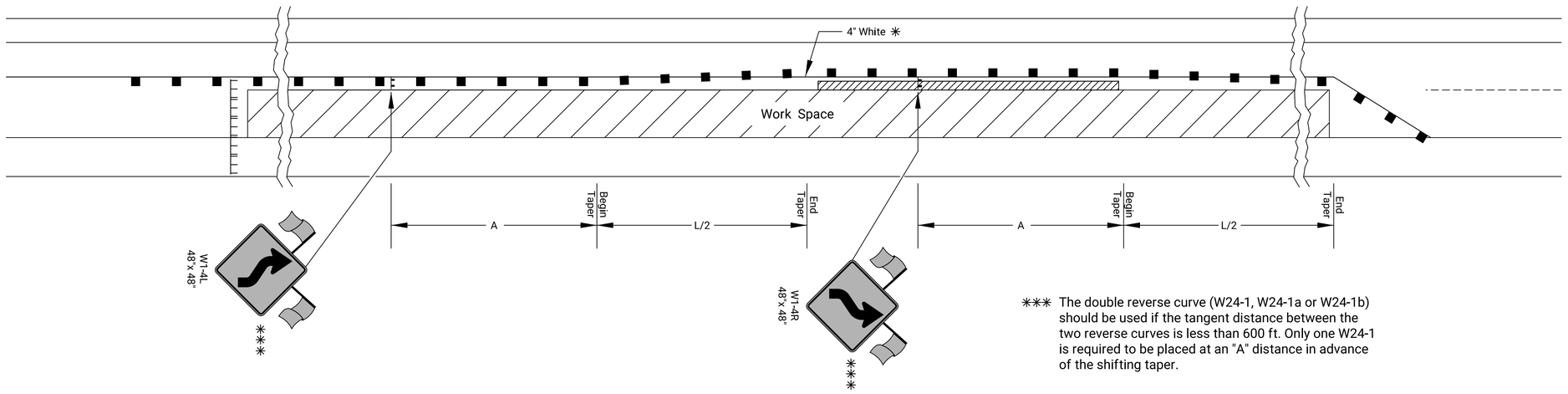
Plotted : 10-FEB-2022 17:46

KDOT Graphics Certified

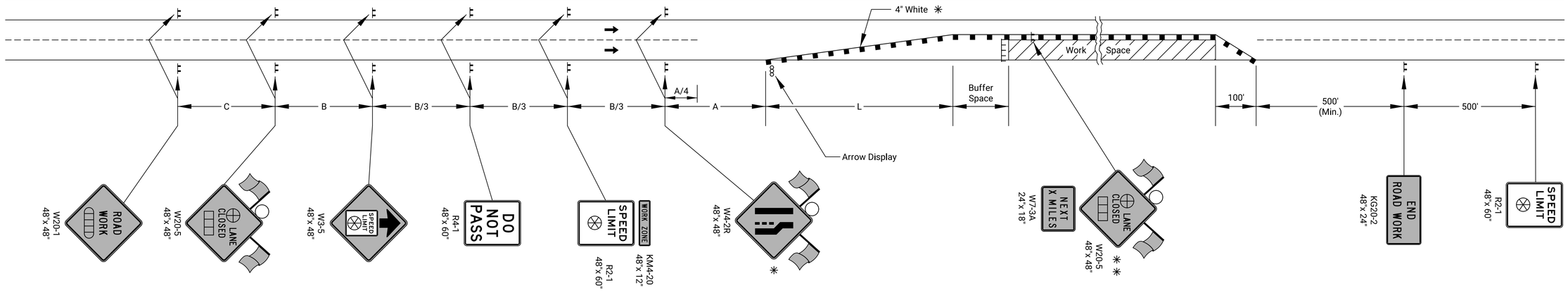
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	78	85

SHIFTING TAPER DETAIL

Add signs and devices as shown for work inside a closed lane that extends near to (or into) the open traffic lane.



✳✳✳ The double reverse curve (W24-1, W24-1a or W24-1b) should be used if the tangent distance between the two reverse curves is less than 600 ft. Only one W24-1 is required to be placed at an "A" distance in advance of the shifting taper.



- Type 3 Barricades
- X Length to the Nearest Whole Mile
- ■ Channelizing Device
- Ahead, 1500 ft, or 1 mile
- Ahead, 1000 ft, 1500 ft, or ½ mile
- ⊕ Right or Left
- ⊗ Speed to be determined by the Engineer
- ○ Type "A" Low Intensity Warning Light

✳ For left lane closures use W4-2L and yellow edge line along channelizing devices.

✳✳ The W20-5 (⊕Lane Closed) and W7-3A (Next X Miles) signs should be placed at 2 mile increments on a project of 4 miles or longer.

Left-side signs shall be omitted for a four-lane undivided highway.

One flagger should be stationed within each multi-lane roadway activity area where work is in a closed lane adjacent to traffic and not separated by a concrete safety barrier system.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	03/13/18	W24-1 usage changed to Should	R.W.B.	E.G.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
LANE CLOSURE ON MULTI LANE HWY

TE744

FHWA APPROVAL			03/13/18	APP'D	Eric Kocher
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

KDOT Graphics Certified 02-09-2022

Sh. No. 78

KDOT Graphics Certified

Plotted : 10-FEB-2022 17:46

Drawn By : TCCusick
File : te744.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2021	79	85

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

Work Zone Sign (Special)		
Sign No.	16.25 Sq.Ft. & Less	16.26 Sq.Ft. & Over
SP-1		1
SP-2		1

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

✳ Quantity most used on the project at any one time

Work Zone Signs ✳			
Sign No.	Size - Sq.Ft.		
	0-9.25	9.26-16.25	16.26 & Over
W20-7		2	
W1-4R		2	
W1-6	4		
W20-1		4	
W20-5		8	
W3-5		4	
W4-2	4		
R11-2	4		
R2-1			8
R4-1			5
KG20-2	2		
KM4-20	4		
	18	20	13

Barricades ✳	
Type 3 (4' to 12')	Pedestrian
30	

Channelizing Devices ✳		
Fixed	Portable	Pedestrian
	120	

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	8
Work Zone Warning Light (Red Type "B" High Intensity)	
Arrow Display	
Portable Changeable Message Sign	1

Recapitulation of Quantities		
Item	Quantity	Unit
Work Zone Signs (0 to 9.25 Sq.Ft.)	3,150	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)	3,500	Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)	2,280	Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')	5,250	Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)	21,000	Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)	1,400	Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)		Each Per Day
Arrow Display		Each Per Day
Portable Changeable Message Sign	180	Each Per Day
Pavement Marking (Temporary)		
4" Solid (Type I)		Sta./Line
4" Solid (Type II)		Sta./Line
4" Broken (8.0') (Type I)		Sta./Line
4" Broken (8.0') (Type II)		Sta./Line
4" Broken (3.0') (Type I)		Sta./Line
4" Broken (3.0') (Type II)		Sta./Line
4" Dotted Extension (Type I)		Sta./Line
4" Dotted Extension (Type II)		Sta./Line
Solid (Line Masking Tape)		Sta./Line
Broken (Line Masking Tape)		Sta./Line
Symbol (Type I)		Each
Symbol (Type II)		Each
Flexible Raised Pavement Marker (4" Broken (8.0'))		Sta./Line
Flexible Raised Pavement Marker (4" Broken (3.0'))		Sta./Line
Pavement Marking Removal		Lin. Ft.
Work Zone Sign (Special) (16.25 Sq. Ft. & Less)		Each
Work Zone Sign (Special) (16.26 Sq. Ft. & More)	2	Each
Rigid Raised Pavement Marker (Type I)		Each
Rigid Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)		Lump Sum
Traffic Control (Initial Set Up)	Lump Sum	Lump Sum
Traffic Control		Lump Sum
Flagger (Set Price)	1	Hour

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SUMMARY OF DEVICES
RECAPITULATION OF QUANTITIES

TE795

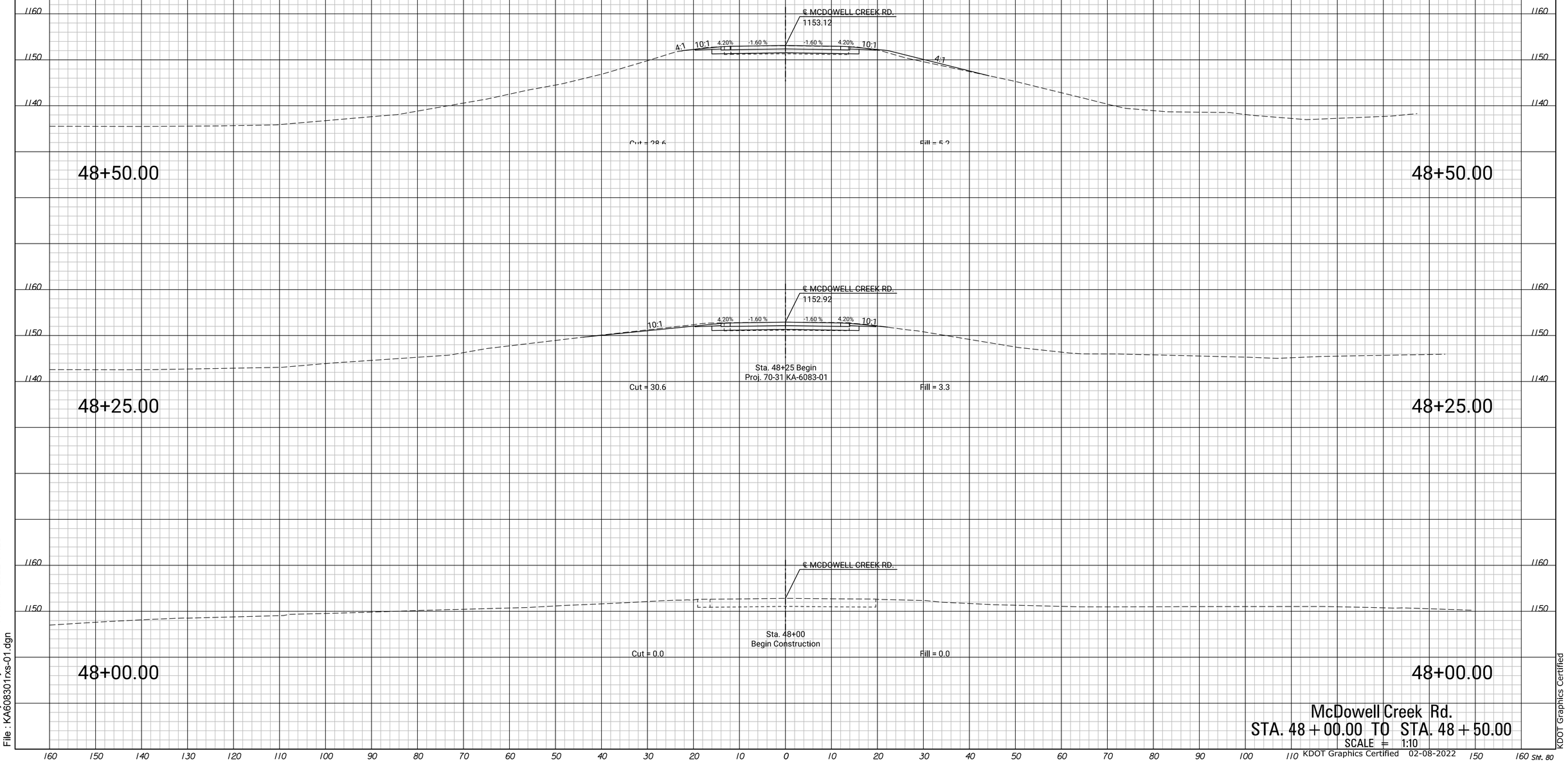
FHWA APPROVAL 06/01/15		APP'D Kristina Ericksen	
DESIGNED B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

KDOT Graphics Certified

KDOT Graphics Certified 02-09-2022

Plotted : 10-FEB-2022 17:46
Drawn By : TCCusick
File : te795.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	80	85



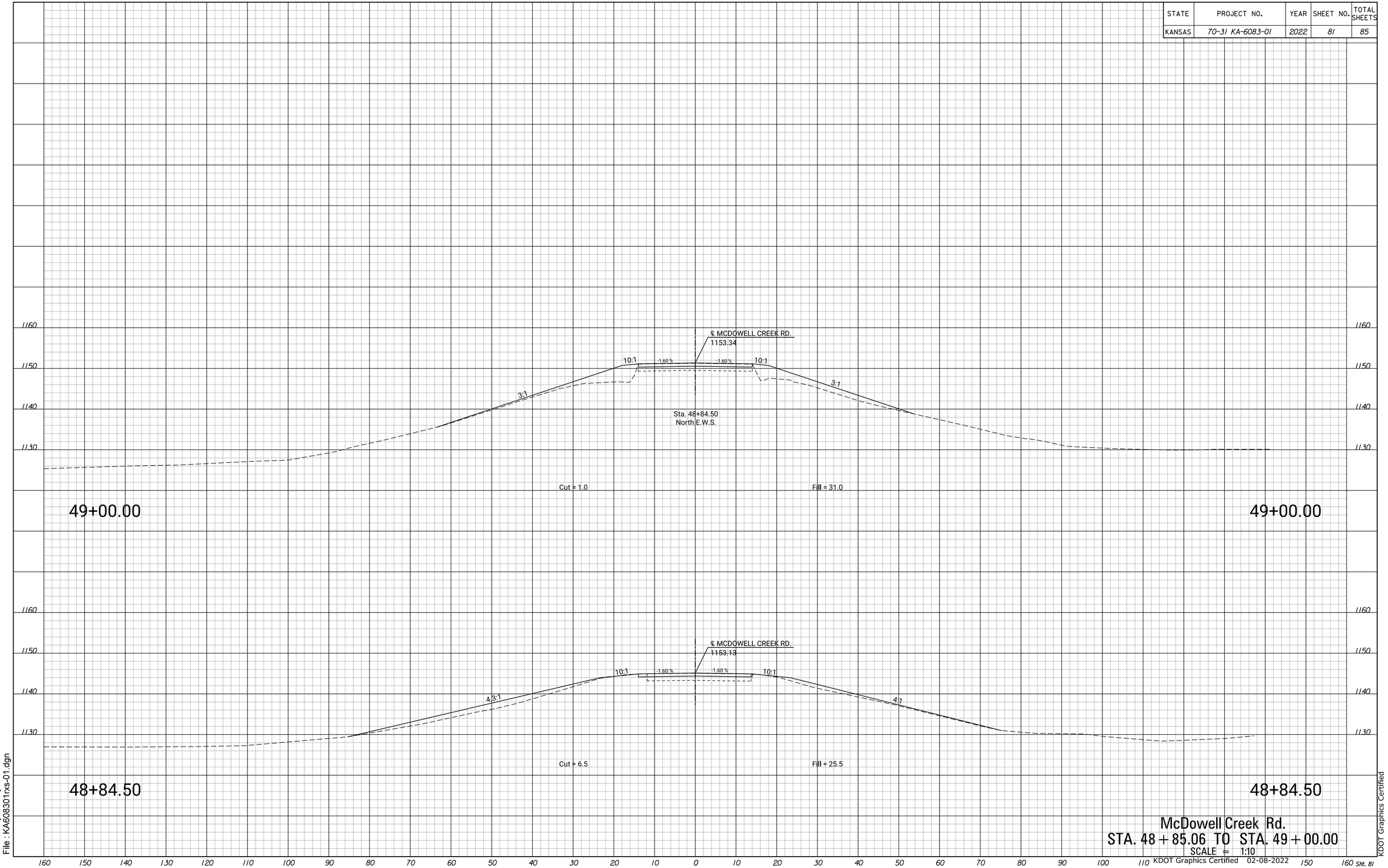
McDowell Creek Rd.
STA. 48 + 00.00 TO STA. 48 + 50.00
SCALE = 1:10

KDOT Graphics Certified 02-08-2022

Plotted by : Stacy.Swann 11-MAR-2022 11:28
File : KA608301rxs-01.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	81	85



McDowell Creek Rd.
STA. 48 + 85.06 TO STA. 49 + 00.00
SCALE = 1:10

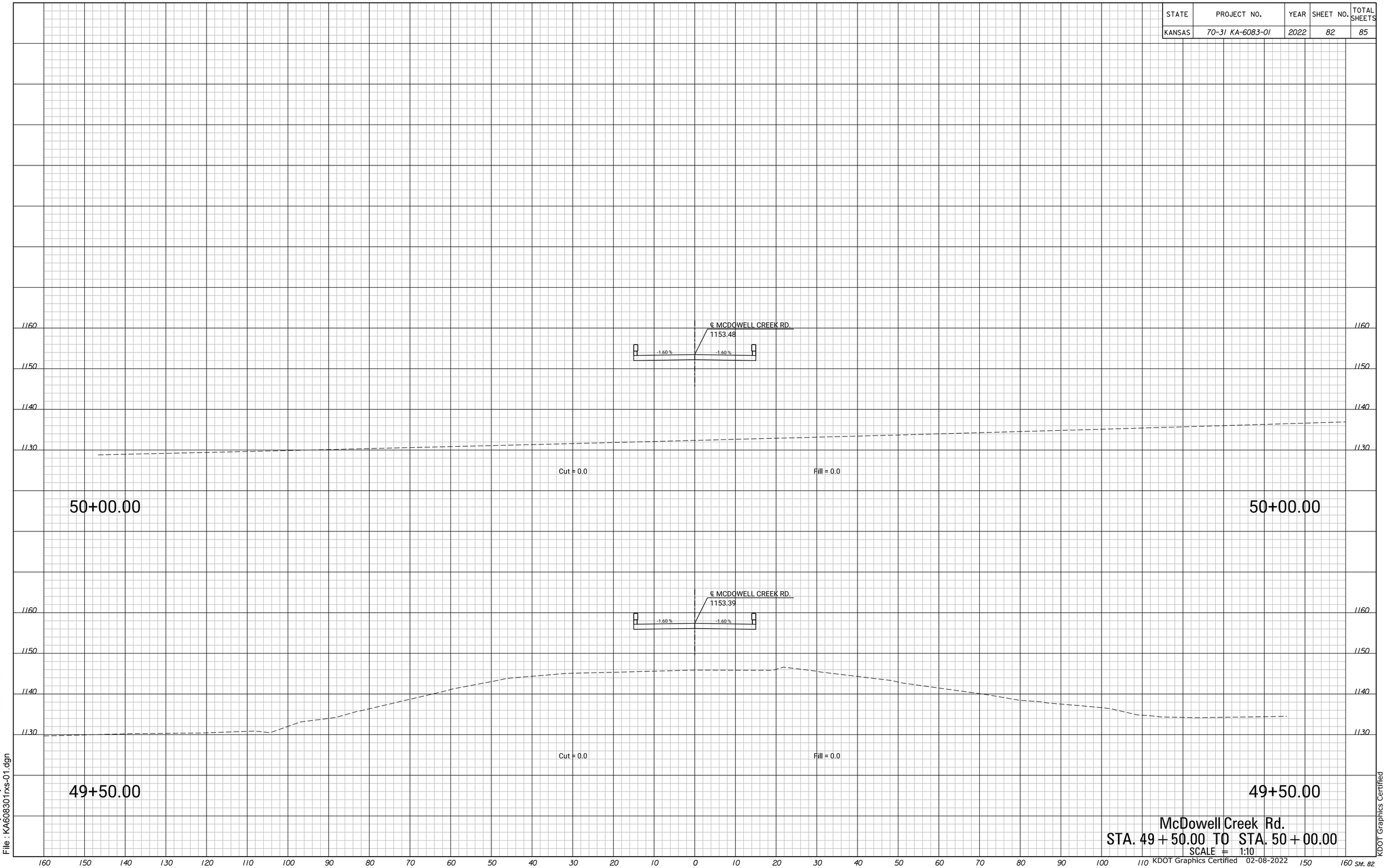
Plotted by : Stacy.Swann 11-MAR-2022 11:30
File : KA608301rxs-01.dgn

KDOT Graphics Certified 02-08-2022

KDOT Graphics Certified

Sht. 81

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	82	85



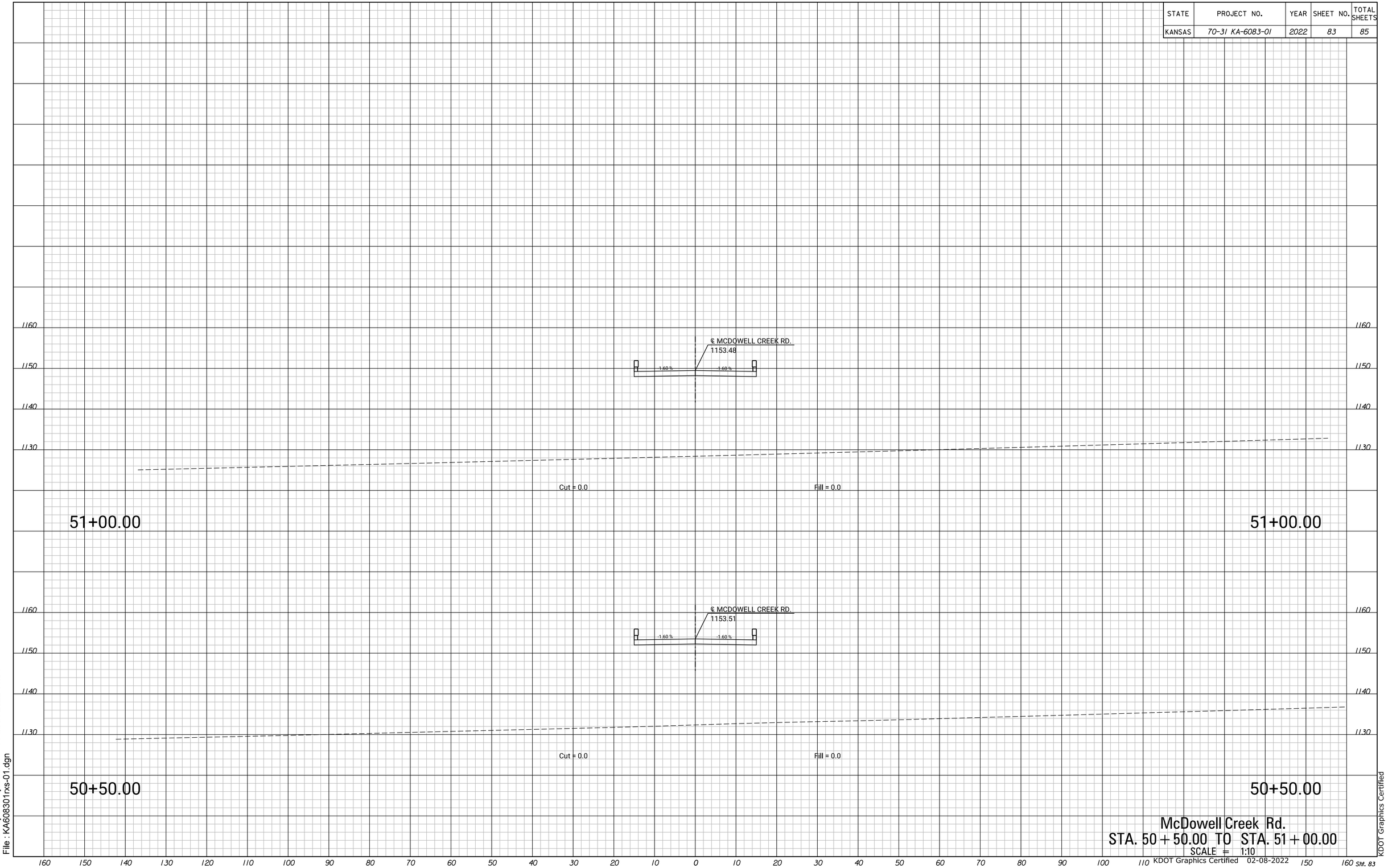
McDowell Creek Rd.
STA. 49 + 50.00 TO STA. 50 + 00.00
SCALE = 1:10

KDOT Graphics Certified 02-08-2022

Plotted by : Stacy.Swann 11-MAR-2022 11:32
File : KA608301rxs-01.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	83	85



McDowell Creek Rd.
STA. 50+50.00 TO STA. 51+00.00
SCALE = 1:10

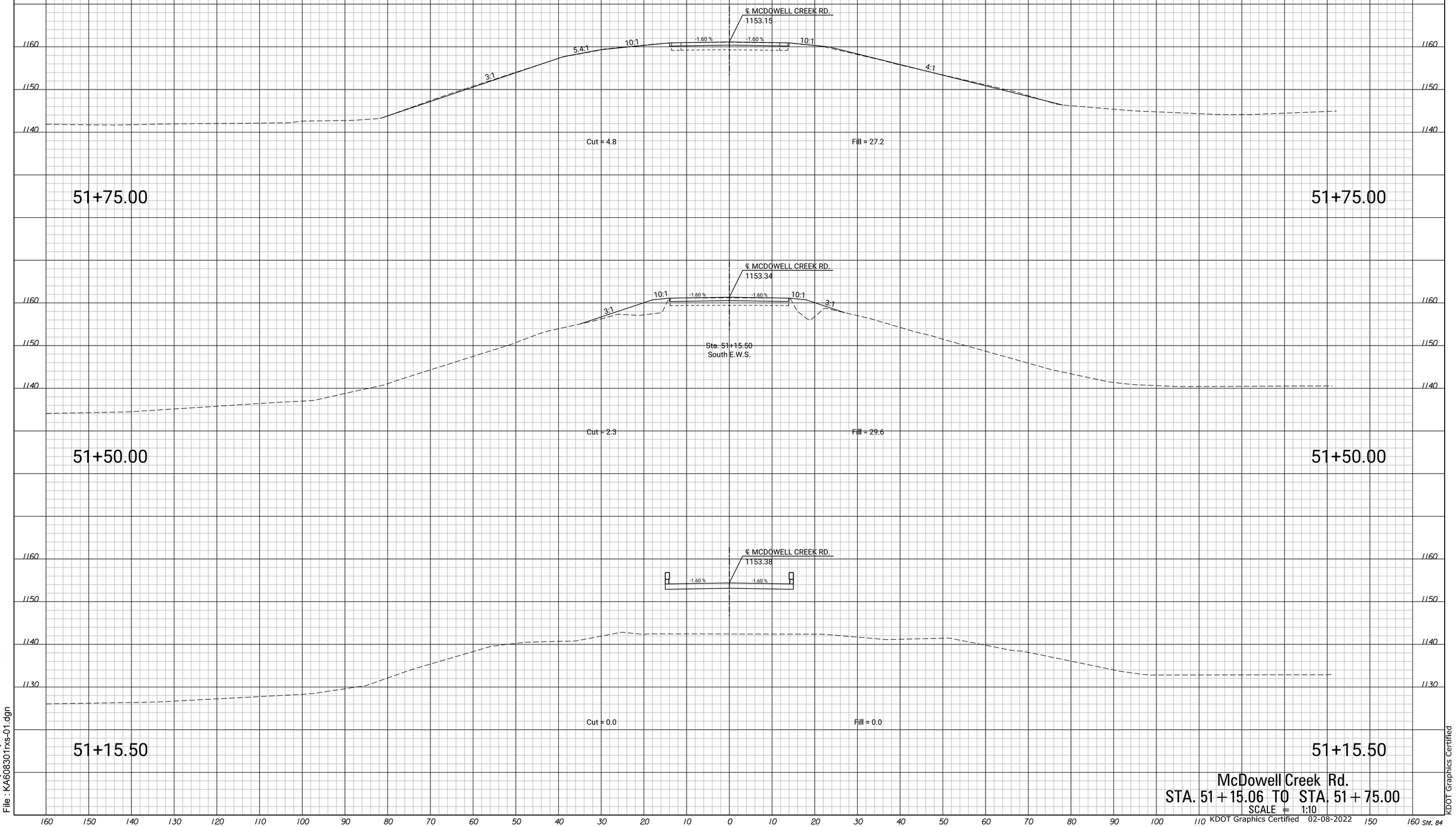
KDOT Graphics Certified 02-08-2022

Sht. 83

KDOT Graphics Certified

Plotted by : Stacy.Swann 11-MAR-2022 11:34
File : KA608301rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	84	85



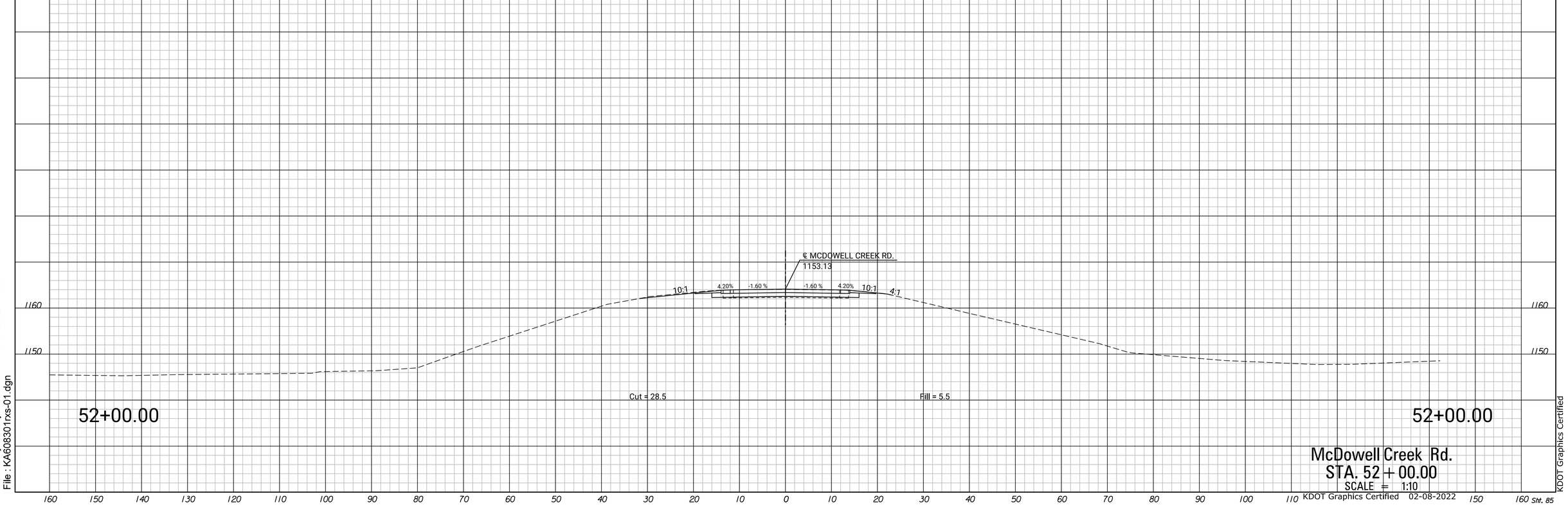
McDowell Creek Rd.
STA. 51+15.06 TO STA. 51+75.00
SCALE = 1:10

KDOT Graphics Certified 02-08-2022

Plotted by : Stacy.Swann 11-MAR-2022 11:37
File : KA608301rxs-01.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	70-31 KA-6083-01	2022	85	85



McDowell Creek Rd.
STA. 52 + 00.00
SCALE = 1:10

KDOT Graphics Certified 02-08-2022

Sht. 85

KDOT Graphics Certified

Plotted by : Stacy.Swann 11-MAR-2022 11:39
File : KA608301rxs-01.dgn